

FineScale MODELER[®]

MAY/JUNE 1984 / \$2.25

Special Staff Report:
New kit releases for 1984

A NEW FEATURE:
FSM Clinic



SUPERDETAILING MOTORCYCLES



FSM SHOWCASE SPECIAL FEATURE

A spectacular 1/32 scale Fw 190D

Joe Berton's "Murat in Egypt"

**Modeling smoke and fire —
an Me 163 Komet diorama**



LARGE SIZE DISPLAY CAR SERIES

MANUFACTURED BY OTAKI PLASTIC MODEL COMPANY



LAMBORGHINI COUNTACH LP 500S

IMPORTED AND DISTRIBUTED BY EMPIRE PACIFIC LTD. CERRITOS, CA
EAST COAST DISTRIBUTOR, ISLAND MODEL CRAFT SUPPLY, Central Islip, NY

- DOORS, ENGINE, HOOD - OPENABLE
- ALL FOUR WHEELS HAVE COIL SPRINGS
- RADIAL TIRES - HOLLOW INSIDE
- WORKING LITES

MERCEDES BENZ 450 SLC



RADIAL TIRES HOLLOW INSIDE UNIVERSAL JOINT

BMW 3.5 CSL



WHITE WOLF FROM BIELEN SLICK TIRES HOLLOW INSIDE

PONTIAC FIREBIRD



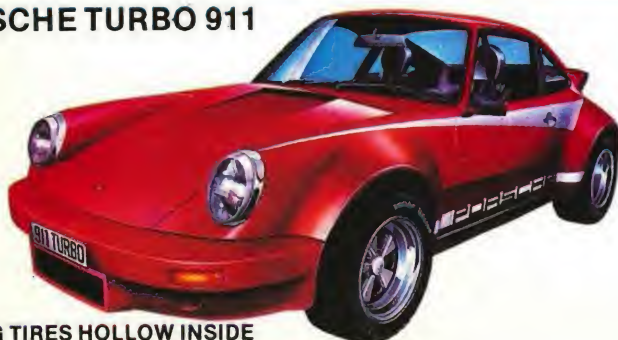
RADIAL TIRES HOLLOW INSIDE DIE CAST WHEEL CAPS

FORD MUSTANG MACH 1



RADIAL TIRES HOLLOW INSIDE DIE CAST WHEEL CAPS

PORSCHE TURBO 911



RACING TIRES HOLLOW INSIDE

CORVETTE STINGRAY



RADIAL TIRES HOLLOW INSIDE REMOVABLE HARD TOP

EDITORIAL STAFF

Editor: BOB HAYDEN
Associate Editor: BURR ANGLE
Associate Editor: PAUL D. BOYER
Editorial Assistant: MARCIA STERN
Editorial Secretary: MONICA BOROWICKI
Librarian: GEORGE H. DRURY

ART STAFF

Art Director: LAWRENCE O. LUSER
Staff Artist: BILL SCHOLZ
Staff Artist: WELLS S. MARSHALL, III
Staff Photographer: A. L. SCHMIDT
Staff Photographer: PAUL A. ERLER

EXECUTIVE STAFF

President and Publisher: JAMES J. KING
Editorial Vice President: DAVID P. MORGAN
Vice President, Sales/Marketing: W. A. AKIN JR.
Executive Art Director: GEORGE A. GLOFF
Ad Sales Manager: FREDERICK J. HAMILTON
Circulation Sales Manager: THOMAS J. D'AMICO
Sales Promotion Manager: GARY W. DOLZALL
Advertising Production Manager: ART CURREN
Advertising Production Assistant: SARA BENZ



ON THE COVER

Paul Budzik's colorful superdetailed 1/12 scale motorcycles keynote this issue's cover, with Carl McLaughlin's fiery Me 163 Komet providing plenty of contrast. While these bikes are Tamiya models, Paul's article (page 36) includes techniques for adding realism to motorcycles from any manufacturer in any scale. If the 1/72 scale Komet is the focal point of Carl's diorama, the real eye-catcher is the realistic plume of flame, smoke, and steam. His article (page 54) explains how you can achieve similar effects. Photos by Paul Budzik and Carl McLaughlin.



FINESCALE MODELER (ISSN 0277-979X) is published bi-monthly (six times a year) by Kalmbach Publishing Co., 1027 N. Seventh Street, Milwaukee, WI 53233, (414) 272-2060. SUBSCRIPTION RATES: 6 issues, \$11; 12 issues, \$20. With foreign postage (outside the United States) 6 issues, \$14; 12 issues, \$26. © 1984, Kalmbach Publishing Co. Title registered as trademark. Second-class postage paid at Milwaukee, WI, and at additional offices. Printed in U.S.A. All rights reserved. This publication may not be reproduced in part or in whole without written permission from the publisher, except in the case of brief quotations used in reviews. POSTMASTER: Send address changes to FINESCALE MODELER, Kalmbach Publishing Co., 1027 N. Seventh St., Milwaukee, WI 53233. Canadian second-class postal permit 9589. Send Canadian address changes to Bowering Custom Brokers, P. O. Box 1173, Fort Erie, Ontario L2A 5N9.

FINESCALE MODELER assumes that such material as letters, club news, news releases, new-product information, etc., is contributed gratis. Feature articles and scale drawings are paid for on acceptance. Photographs accepted separately are paid for upon publication. Leaflets outlining in detail the preparation of features, photographs, and drawings are available on request from the Editorial Secretary. Unsolicited material, if not accepted, will be returned only if postage and wrappings are provided for this purpose. FINESCALE MODELER assumes no responsibility for the safe return of unsolicited material.

FineScale MODELER

VOL. 2 NO. 4 MAY/JUNE 1984



Page 18



Page 28



Page 46

18 FSM SHOWCASE SPECIAL FEATURE: Mark Waki's 1/32 scale Fw 190D-9

There's more to this magnificent scratchbuilt model than first meets the eye

22 The ABCs of LEDs

Adding interest and animation to your models with working lights
DAVID REED

28 Modeling "Murat in Egypt"

A 1/32 scale mounted figure conversion based on Historex parts — and a toy horse! JOE BERTON

32 Introducing FSM Clinic

A new FSM department to help solve your modeling problems PAUL BOYER

36 Superdetailing 1/12 scale motorcycles

Techniques you can use to improve any motorcycle model PAUL BUDZIK

43 Shrinking the "Stretch Eight"

Building a 1/144 scale DC-8 Series 50 from Revell's DC-8 Series 61
DAVID MINTON

46 Recognition models — the government-issue miniature air force

A look back at the roots of scale aircraft modeling ROBERT C. MIKESH

54 Modeling smoke and fire — an Me 163 in flight

This Komet has a fiery tail CARL MCLAUGHLIN

DEPARTMENTS

4 Update

10 Workbench Reviews

15 FSM Looks at New Products

17 From the Editor

58 Book Briefs

67 Tips and Techniques

70 Index to Advertisers

These 2 books—at less than half price—can start you on the most challenging engrossing, relaxing hobby you'll ever experience.



EXPLORE THE WORLD'S OLDEST HOBBY!

Now, re-discover the new-old hobby of building historic wooden model ships. It really isn't hard. Not when you can choose a kit with pre-cut parts that make assembly easy. And clear, large-scale plans and instructions that virtually take you by the hand and guide you every step of the way.

It may not be for everybody, but this "less than half-price" offer will help you decide if it's for you!

You can learn all about this fascinating hobby by mailing the coupon below, along with your check or money order for \$5. Here's what you'll get in return:

- Richard Manser's "How to Build Ship Models," a 64-page beginner's guide that regularly sells for \$7.95.

- Our own 80-page, full-color catalog illustrating the widest selection anywhere of historic wooden ship model kits, cannon kits, and miniature hobby tools. Regularly sells for \$3.

That's a \$10.95 value for just \$5. What's more, we'll also include a certificate worth \$3 on your first ship kit order!

When you receive your catalog, see for yourself the many ship model kits you can build. And how easy it can be to build one. You can climb aboard the world's oldest hobby by filling out and mailing the coupon below.

MODEL EXPO, INC.

23 Just Road, Fairfield, N.J. 07007

Mail this coupon today!

Model Expo, Inc. Dept. FSM-54
23 Just Road, Fairfield, N.J. 07007

YES! Please send me your catalog and Beginner's Guide (\$10.95 combination value) for just \$5. My check or money order is enclosed.

Name _____
Address _____
City _____
State _____ Zip _____

FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. A description of our new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

Kit releases. See pages 6 and 7 for a special report on new kit releases for 1984.

CMS Marketing International, 42 Anerley Hill, London SE19, England, is the worldwide distributor of the Red Star line of injection-molded plastic aircraft models. Red Star kits are produced in England, and are the former Frog/Novo kits that were never previously released. All four new releases are 1/72 and each includes multiple markings produced by Richard Ward of Model-decal. The kits are No. F308, MiG 3; F310, LaGG 3; F311, Yak-3; and F312, WWI Anatra DS Anasal.

New Tamiya kits released by Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, include No. 1419, 1/12 Ducati 900 Mike Hailwood replica motorcycle, \$11.98; 1425, 1/12 Ducati 900 SS, \$12.98; 1426, 1/12 Yamaha YZR-500 and Kenny Roberts figure, \$11.98; and 2436, 1/24 Audi Quattro Rally, \$11.98. Model Rectifier also has released a radio control model of the WWII submarine U. S. S. *Gato*.

PM Plastic Model, P. K. 133, Bakirköy, Istanbul, Turkey, has released kit No. 005, a 1/72 Northrop T-38A Talon with Turkish and Portuguese air force decals.

Decals. New 1/200 decals from ATP Incorporated, 3014 Abelia Court, San Jose, CA 95121, include No. 200AD05, Bahamasair 737, \$2.00; 200AD06, United Caravelle jet or Boeing 737-222, \$2.00; 200AD07, A300B Airbus windows and doors, \$1.00; 200AD08, Boeing 767 windows and doors, \$1.00; and 200AD10, Piedmont Boeing 727 or 737, \$2.00. ATP also has released the following 1/144 decals: No. AD5023, Piedmont 727, 737, or Dash 7, \$3.00; AD5035, Pan Am widebody, \$3.50; AD5037, Bahamasair 737, \$3.00; AD5042, Boeing 757 windows and doors, \$2.00; AD5043, Boeing 767 windows and doors, \$2.00; AD5044, A300B Airbus windows and doors, \$2.00; and AD5045, narrowbody door outlines, \$.60.

New 1/144 Carmichael Airliner Models decals available from ATP are No. CD-001, Pacific Western 737, \$3.00; CD-002, Air Canada DC-9-30, \$3.00; CD-003, Air Canada L-1011, \$4.50; CD-004, CP Air DC-10-30, \$4.50; and CD-005, Wardair DC-10-30, \$4.50.

Krasel Industries, Inc., 1821 East Newport Circle, Santa Ana, CA 92705, has announced its latest Microscale Decal releases. For 1/72 aircraft is sheet No. 72-416 for P-3 Orions in foreign service including aircraft from New Zealand, Japan, Spain, and Iran. Sheet 72-417 is low-visibility "Navy" and "Marines" markings. Sheet 72-418 gives markings for P-51Bs in the ETO. Sheet 72-419 is for a T-6 Texan of the Brazilian Air Force, an SNJ-4 of the U. S. Navy Reserve, Denver, a Texan of the Royal Swedish Air Force, and a New Zealand Air Force Harvard. Sheet 72-420 includes mark-

ings for a Carrier Air Wing 9 F-4B and an A-7E. Sheet 72-421 has a Carrier Air Wing US-3A and an A-6A. Sheet 72-422 is for U. S. Navy C-121J and WV-2 Constellations. Three more Navy Constellations make up sheet 72-423.

For 1/48 aircraft, Microscale has released sheet No. 48-191 for three low-visibility F-18 Hornets. Sheet 48-192 has low-visibility markings for two A-4Ms and a TA-4J. Sheet 48-193 is for camouflaged U. S. A. F. F-4C and F-4E Phantoms. A camouflaged F-4C, F-4E, and an all-gray F-4E are featured on sheet 48-194. Sheet 48-195 is for F-106A and B, including General Chappie James' aircraft. More Phantoms appear on sheet 48-196, including the 5000th Phantom. MiG-killers Ritchie, Olds, and Haeffner's Phantoms are on sheet 48-197. "Bob's Buggy" and "Mike's Bird" are the F-86F Sabers featured on sheet 48-198.

War Eagle, Incorporated, P. O. Box 255, New Baltimore, MI 48047, has released a 1/48 WWII British insignia decal sheet, No. S001. It sells for \$6.00.

Paints and adhesives. Winsor & Newton, Inc., 555 Winsor Drive, Secaucus, NJ 07094, has added a smaller tube size—21 ml—to its line of Artists' Oil Colours. Ninety-five colors are available now at retail stores for between \$2.30 and \$7.30 per tube.

Accessories and diorama materials. Blue Ribbon Models, Box 888, Marblehead, MA 09145, sells hand-processed Maine woods lichen. The colors range from light to medium green with an occasional rust or autumn shade. Send \$2.90 for a 1-ounce sample, \$28.00 for a 1-pound bag, and \$76.00 for a 3-pound bag; all prices include postage. Blue Ribbon also sells Atlantic Scale Modelers' scenic foam in light green, medium green, forest green, ballast, gravel, and coarse green. The lightweight, foam rubber material costs \$2.95 for a 2½-ounce bag, including postage; one bag will cover about 6 square feet.

Northeastern Scale Models, Inc., P. O. Box 425, Methuen, MA 01844, is offering custom hardwood shapes and turnings in a variety of scales. Turnings are available up to 9" long, while other products are available up to 24" long.

A 1/87 Hyster logging cruiser and D-7



tractor, No. D-246, has been released by Woodland Scenics, P. O. Box 98, Linn Creek, MO 65052. It contains detailed metal castings and sells for \$7.98.

Tools. Badger Air-Brush Co., 9128 West Belmont Avenue, Franklin Park, IL 60131, has introduced the model 150-4 PK airbrush



set. The set comes in a wooden case containing a model 150 dual-action, internal-mix airbrush. Also included are a ¼-ounce (22 cc) attached jar, protective cap, HD head assembly and needle, ¼-ounce (7 cc) color cup, 2-ounce (60 cc) jar with cover, 8' braided air hose, ¼" pipe thread fitting, wrench for head, airbrush holder, and an instruction book.



Hobby Products Company, P. O. Box 07846, Columbus, OH 43207, has released two new products: the Playmat machinery set for woodworking in miniature and the Hobby-Lux 450 18" jigsaw. The Playmat, \$79.95, can be used for wood turning, sawing, drilling, and grinding, and is safe for ages nine and up. The Hobby-Lux 450 operates from 110 volts AC and has a table that can be tilted 45° in either direction for angle cuts. The table size is 8" x 9¼" and the cutting height is 2.2". It is priced at \$120.00.

Two new products from Jarmac, Inc., P. O. Box 2785, Springfield, IL 62708, are a foot-operated rheostat and a 4" table saw blade. The rheostat, \$27.50, allows infinite speed variations with any fractional horsepower motor. It comes with an 8'-long cord. The 4" table saw blade is .016" wide and has more than 200 teeth. The blade sells for \$7.45. Support cup washers are required because the blade is thin; a pair sells for \$2.50. Add \$2.00 for postage.

The Mini-Vac from Mini-Vac, Inc., P. O. Box 3981, Glendale, CA 91201, is a lightweight vacuum cleaner designed to remove dust and debris from hidden or hard-to-reach areas. It comes with two interchangeable wands, two fine bristle brushes, and a cloth vacuum bag, and it can be DC or AC powered. The Mini-Vac is priced at \$29.95.

The M. M. Newman Corporation, 7 Hawkes Street, P. O. Box 615, Marblehead, MA 01945, sells interchangeable slide-on tips in more than 40 shapes and sizes to fit Antex miniature soldering irons. The tips are

More FSM Update on page 8

CROWN · EIDAI/GRIP · EKO · ESCI · FORMA PLANES · FROG/NOVO · FUJIMI · HASEGAWA · HELLER · RO · ROSKOPF · SQUADRON/SIGNAL PUBLICATIONS · TAMIYA · TESTORS · T S R GAMES & RULES · VALIANT CLAN PRINTS · WATERLINE SHIPS · JOHAN · KVOZAVODY/CZECH · L S · MAGAZINES · MATCHBOX · METAGAMING · MICRO SCALE DECALS · BANDAI · BELT BUCKLES · BOOKS · BRUMM · NICHIMO · PEERLESS · RAREPLANES · RO · CO

W. R. W. IMPORTS, INC.

ALL INQUIRES WELCOME

10 South Havana #108
Aurora, CO 80012
303/340-3844

Catalog \$1.00

**SCALE MODEL KITS & ACCESSORIES
FROM AROUND THE WORLD**

SMOKE · AIRMODEL VACUFORMS · WIKING · KVOZAVODY/CZECH · L S · MAGAZINES · MATCHBOX · METAGAMING · MICRO SCALE DECALS · BANDAI · BELT BUCKLES · BOOKS · BRUMM · NICHIMO · PEERLESS · RAREPLANES · RO · CO

THIS COUPON IS FOR THOSE WHO JUST CAN'T CUT IT.

If the blade in your X-Acto® knife can't cut effortlessly through the coupon below—and at least two of the pages behind it—then you're the craftsman who needs this coupon most.

Because unless your blade passes this simple test, it's no longer giving you the exacting precision it was designed for. And, sooner or later, that lack of accuracy will make its mark where it matters most. In your work.

So if you find that you're still using a blade that's past its prime, cut it out. Cash in the coupon where you buy your craft and hobby supplies, and we'll cut 25¢ off the price of your next X-ACTO blade purchase.

Put new life in your X-Acto knife.

25¢ OFF

SAVE 25¢ ON YOUR NEXT PURCHASE OF 15 X-ACTO BLADES In a 15-count dispenser or any three 5-count tuck packs.



X-ACTO
CRAFT KNIFE BLADES

X-ACTO

TO OUR DEALER: As a legitimate retail distributor of the brands/sizes indicated you are authorized to redeem this coupon as our agent. We will pay the face value plus 5¢ handling for each coupon redeemed only if you and the consumer have complied with the terms of the offer. Invoices showing purchase of sufficient stock to cover coupons presented must be shown on request and failure to do so may at our option void all coupons submitted for redemption on this offer. This coupon is nonassignable and void if presented by outside agents. Sales tax is to be paid by the consumer. Coupon void if taxed, prohibited or legally restricted. Cash value 1/20¢. Mail coupons to Hunt/X-Acto, Inc., P.O. Box 4243, Clinton, Iowa 52704.

TERMS OF COUPON: The submission of this coupon by the dealer for redemption represents that the face value has been deducted from the retail selling price of the brands/sizes indicated at the time of purchase by the consumer. Mint condition and gang cut coupons (coupons not circulated to and redeemed by the consumer) will not be redeemed. This coupon may not be mechanically reproduced. Only one coupon redeemed per purchase.

COUPON EXPIRES: 8/31/84

© 1984 HUNT/X-ACTO INC.

An FSM Staff Report 1984 New Kit Releases

This special report was compiled from information provided by manufacturers, distributors, and importers. A few companies are importing foreign kits under their own label; some of these may not be "new" to the modeler. Prices and release dates are projected and subject to change. Catalog prices, when listed, include postage.

BLUEJACKET SHIPCRAFTERS

93 Canal St., Shelton, CT 06484
Catalog, \$2.00
C. S. S. Virginia 1/16" = 1", July
Jefferson Davis 7/32" = 1", July

COMBAT MODELS

1633 Marconi Road, Wall, NJ 07719
Vacuum-formed kits, catalog, \$3.50

1/48 aircraft

Lockheed P2V-7 Neptune
McDonnell XP-67 Moonbat
Convair YF2Y-1 Sea Dart
Grumman XF10F Jaguar
Yak-36 Forger
Grumman F5F Skyrocket

1/32 aircraft

Lockheed P-80 Shooting Star
Chance Vought F7U Cutlass
Vought XF5U-1 Flapjack
1/72 Airmodel re-releases

Douglas C-124
North American AJ-1 Savage
Donier Do 24

North American F-107
Focke Wulf Fw 187

Blohm und Voss Ha 139

Heinkel He 70

Grumman AF-2 Guardian

Junkers Ju 287

Junkers Ju 288

Northrop XB-49 Flying Wing

Blohm und Voss Bv 238

Arado Ar 232

1/72 ships

German Type IX A, B, C U-boat

German Type IX D U-boat

German WWI U-35

U. S. S. Ward

EAGLES TALON

P. O. Box 156, Sun Valley, CA 91352
Vacuum-formed aircraft kits

1/72

Nakajima Rex

D-21 drone

Douglas B-42

Douglas B-43

HL-10, M2F2 lifting bodies

X-13

Commonwealth CA-15

Vought F8U-3

1/48

D-21 drone

ASM Claude

EMPIRE PACIFIC

13130 Destino Place, Cerritos, CA 90701
Empire Pacific imports several lines of Japanese kits.

Arii

1/500 Sun Flower Ferryboat, Apr., \$14.98

1/76 military dioramas, Jan., \$2.75

Gunze Sangyo

1/32 '59 Cadillac Eldorado Convertible, Jan., \$6.50

Mitsuwa

1/20 U. S. Willys Jeep, Feb., \$12.98

Nichimo

U. S. S. Carl Vinson (30 cm long), Feb., \$4.50

Nitto

1/100 Boeing 767 United, Apr., \$36.95

Otaki

1/350 WWII U. S. S. New Jersey, Jan., \$38.95

1/144 Super Guppy 201, Apr., \$14.98

1/12 Lamborghini Countach LP500, Apr., \$44.95

Tokyo Marui

1/24 Lamborghini Countach, Apr., \$9.98

1/24 Ferrari 308 GTB, Apr., \$9.98

1/1 .44 Magnum M-629, Mar., \$27.00

Union

1/20 Porsche 917, Apr., \$11.98

ERTL

(including AMT and ESCI)

Hwys. 136 and 20, Dyersville, IA 52040

Catalog available

1/25 autos

'36 Ford Coupe, Feb., \$6.25

'55 Chevy Nomad, Feb., \$6.25

Chi-Town Hustler, May, \$6.25

A-Team Van

1/16 autos

'55 Chevy Nomad, June, \$13.75

'64½ Mustang Hardtop, June, \$13.75

'57 Chevy Belair Convertible, June, \$13.75

'57 Thunderbird Hardtop, June, \$13.75

GHO

2634 Bryant Avenue South, Minneapolis, MN 55408, catalog, \$5.50

1/285 metal war gaming pieces

Leopard II, Feb., \$4.25/pack

M548 Cargo Carrier, Feb., \$4.25/pack

ACAV M113, Feb., \$4.25/pack

Sturmörser Tiger, Feb., \$4.25/pack

Flak 36 with 8-ton SdKfz 7, Feb., \$4.25/pack

T-80, Feb., \$4.25/pack

HELLER

Polk/Heller, 346 Bergen Avenue, Jersey City, NJ 07304

Heller catalog, \$2.00

Bobcat Range

1/43 Wabco Dumper, Feb., \$12.95

1/43 Wabco Digger, Apr., \$12.95

1/24 Renault G260 Truck, July, \$14.95

1/24 Renault Sport Team, Oct., \$7.95

1/72 Super Transall, Oct., \$13.95

1/72 aircraft

Super Etendard, May, \$6.50

Lockheed T-33 "T-bird," June, \$6.50

Etendard IV M, July, \$6.50

Lockheed F-94B Starfire, Aug., \$6.50

Douglas DC-6B Securite, Aug., \$13.95

Douglas DC-6B S. A. S., Nov., \$12.95

1/24 autos

Citroën Landulet Taxi, Feb., \$16.95

1970 Porsche 917K, Mar., \$16.95

1970 Ferrari 512S, Mar., \$16.95

Brabham BT 33 Kyalami, May, \$16.95

Lotus 49B, May, \$16.95

Alpine 1600, July, \$16.95

1969 Porsche 908 Monza, July, \$16.95

1/16 autos

Citroën DS 19, Nov., \$25.95

1/8 motorcycles

BMW 100RT Police, May, \$34.95

Ships

1/60 Kurun sailboat, Mar., \$11.95

1/150 Corsair, June, \$8.95

1/200 Avenir car ferry, June, \$30.95

KOSTER AERO ENTERPRISES

233 E. Ellis Avenue, Libertyville, IL 60048

Send SASE for catalog.

1/48 B-17C and D conversion, Jan., \$8.95

1/48 P-38E, F, F-5E, or pathfinder conversion, Sept., \$5.95

KPL MODELS

703 Cannon Road, Silver Spring, MD 20904

Send SASE for catalog.

1/72 vacuum-formed aircraft

Kawasaki Ki-64, Feb., \$3.95

Kawasaki Ki-108, Feb., \$6.95

Kawasaki Ki-60, Feb., \$3.95

Fokker T. V, Apr., \$7.95

Fokker T. IX, Apr., \$7.95

Fiat C.R. 25 bis, July, \$7.95

Amiot 350 series, July, \$7.95

IMAM Ro.58, Oct., \$7.95

Saab 18, Oct., \$7.95

Commonwealth Woomera, Dec., \$7.95

Caproni Ca.331B Raffica, Dec., \$7.95

LINDBERG

191 West Carpenter, P. O. Box 880, Wheeling, IL 60090

1/48 aircraft

Saab Draken, Hawker Hunter, Douglas Skyray, Me-262

1/32 autos

'52 Chevy Fastback, '40 Ford Convertible, '57 Chevy Convertible, '34 Ford Coupe

1/24 autos

Corvette TC-8, Camaro Kammback, Firebird Sportwagon, Mustang DE-4

1/18 autos

Corvette EXP

Ships

Landing Ship Tank

Tuna Clipper

Diesel Tug

Fishing Trawler

Chris Craft Sport Fisherman

MATCHBOX

Distributed by Irwin Toy Ltd., 43 Hanna Ave., Toronto, Ontario, Canada M6K 1X6

Matchbox catalog, \$5.50

1/72 aircraft

DHC-6 Twin Otter, May

SA 365N Dauphin (HH-65A Dolphin), Sept.

1/32 autos

Auto Union Type D, May

1/76 figure sets

NATO Paratroopers, June

MINICRAFT MODELS

(including Hasegawa)

1510 West 228th Street, P. O. Box 3577, Torrance, CA 90510, catalog, \$4.00

1/48 aircraft

F-16 Thunderbird, Jan., \$21.00

F-4E Phantom II, Mar., \$21.00

Weapons Set C, Mar., \$12.00

F-4G Wild Weasel, May, \$21.00

F-15E Strike Eagle, June, \$24.00

F-4F Phantom II, July, \$21.00

F-15J Eagle, Sept., \$21.00

F-15C Eagle, Oct., \$21.00

F-14A Tomcat, Nov., \$30.00

1/72 aircraft

Hughes AH-64A Apache, Jan., \$7.00

Weapons Loading Set, Jan., \$4.50

BAe Sea Harrier FRS Mk. 1, Feb., \$6.00

BAe Harrier GR Mk. 3, Mar., \$6.00

Sepecat Jaguar GR Mk. 1A, Apr., \$7.00

F-15E Strike Eagle, Apr., \$12.00

Sepecat Jaguar E/T Mk. 2, May, \$7.00

Northrop F-20 Tigershark, June, \$6.00

Ground Equipment, June, \$6.00

F-16A Fighting Falcon, Sept., \$6.00

P-3C Update Orion, Oct., \$24.00

F-16A Thunderbird, Nov., \$6.00

UH-60 Blackhawk, Dec., \$8.00

General Dynamics F-111A, Dec., \$12.00

1/200 aircraft

Space Shuttle, Sept., \$6.00

1/1 guns

.357 Colt Python, Feb., \$18.00

.44 S&W Magnum, Feb., \$18.00

Sailing ships

1/48 Roman Warship, May, \$13.00

1/48 Greek Warship, May, \$13.00

1/80 Chebec Vessel, May, \$28.00

MONOGRAM MODELS

8601 Waukegan Road, Morton Grove, IL 60053-2295

Catalog, \$2.00

1/144 aircraft

Snap Tite B-1B, Feb.

U. S./U. S. S. R. Strategic Missiles, Sept.

1/72 aircraft

F-15E Strike Eagle, Mar.

Heritage Edition F7F Tigercat, Mar.

Heritage Ed. F-82 Twin Mustang, Mar.

F-105G Wild Weasel, June
 EF-111A Electronic Fox, June
 SR-71A with D-21 Drone, June
 Heritage Ed. HU-16B Albatross, July
1/48 aircraft
 F-104C Starfighter, Feb.
 Heritage Ed. First Lunar Landing, Mar.
 F-84F Thunderstreak, Mar.
 Heritage Ed. Mosquito Bomber, July
 Sherman/Fw 190 Combat Kit, July
 Panther/P-51B Combat Kit, July
1/32 aircraft
 Heritage Ed. Apollo CSM, Mar.
 Blue Thunder Helicopter, Aug.
1/24 autos
 Miller Buick Regal, Jan.
 Piedmont Monte Carlo SS, Jan.
 Glidden Thunderbird, Apr.
 Reher & Morrison Camaro, Apr.
 Iaconia Camaro, Apr.
 Smith Thunderbird, Apr.
 Coors Thunderbird, May
 Budweiser Monte Carlo, May
 Blue Thunder Combat Vehicle, Aug.
 Car Collector's Display Case, Aug.
 Snap Tite Barbie Vette, Sept.
 '68 Pontiac GTO, Oct.
 '71 Plymouth Satellite, Oct.
 '85 Pontiac Trans Am, Oct.
 '85 Corvette, Nov.
 Pontiac Fiero GT, Nov.
 Mustang SV0, Nov.
1/8 autos
 '85 Corvette, Sept.
1/87 (HO) locomotives
 Union Pacific Big Boy, Aug.
 Baltimore and Ohio Big Boy, Aug.
 Duluth, Mesabi & Iron Range Big Boy, Aug.

MPC (including Airfix)

26750 Twenty-Three Mile Road, Mount Clemens, MI 48043
 Catalog free upon request.

1/72 aircraft
 P-47D Thunderbolt, Feb.
 F-104 Starfighter, Feb.
 Avro Vulcan, Feb.
 Rockwell B-1B, Feb.
 YOV-10D NOGS Bronco, Mar.
 TBD-1 Devastator, Mar.
 Henschel Hs 123, May
 OS2U Kingfisher, May
 Mirage F.1C, June
 Lockheed U-2, June
 Tornado GR1, June
 Kamov Ka-25 Hormone, July
 F-84F Thunderstreak, July
 Mil Mi-24 Hind, July
1/48 aircraft
 EA-6B Prowler, May
 Sea Harrier, July
1/24 aircraft
 Bf 109E, July
1/76 armor and figures
 Modern U. S. Assault troops, Feb.
 Tank transporter, Mar.
 Reconnaissance Patrol, Mar.
 Antiaircraft Battery, Mar.
 Modern Soviet Infantry, Mar.
 WWI German Infantry, Mar.
 WWI American Infantry, Mar.
1/600 ships
 Iron Duke, Apr.
 Moscow, Apr.
1/32 autos
 1984 Corvette, Aug.
 Mustang Road Racer, Aug.
1/25 autos
 '72 Chevelle SS, Feb.
 Pontiac Fiero P-Car, Feb.
 '57 Chevy, Mar.
 '60 Corvette, Mar.
 '67 Corvette, Mar.
 '53 Ford Pickup, Apr.

Strike Force, May
 Dodge Ram-Off Road, May
 Barracuda Pro Street, June
 '67 Pontiac GTO, July
 '69 Mustang Mach 1, July
 Turbo Firebird, Aug.
 Cody Coyote
1/16 autos
 Street Charger, Aug.
 '63 Corvette Split-Window, Aug.
Return of the Jedi Snap kits
 Y-wing Fighter, Mar.
 AT-ST, Mar.
Super Powers
 Superman, Apr.
 Batman, Apr.

MRC-TAMIYA

Model Rectifier Corporation, 2500 Woodbridge Avenue,
 Edison, NJ 08817
 Catalog, \$4.00

1/35 armor
 Israeli Merkava MBT, Mar., \$19.98
 Livestock set, Apr., \$4.25
 German soldiers at rest, May, \$3.98
 Remote Control M1 Abrams, Mar., \$22.98
1/12 motorcycles
 Kawasaki KR500 G. P. Racer, Feb., \$10.98
 Suzuki RG 250, full options, Mar., \$10.98
 Honda VT250 Integra, Apr., \$12.98
 Fully Cooled Honda VF750F, May, \$12.98
 Honda NS 500 G. P. Racer, May, \$12.98
 Hang-on rider, May, \$4.98
1/24 autos
 Mercedes Benz 500 SEC, Jan., \$14.98
 Toyota Soarer 2800 GT, Mar., \$9.98
 Morris Mini Cooper, Feb., \$11.98
 Honda Ballade Sports, Mar., \$10.98
 Toyota Delivery Van, Mar., \$14.98
 Datsun 300ZX, Apr., \$12.98
1/700 ships
 Yubari light cruiser, May, \$8.98

RAREPLANES

69 Redstone Hill, Redhill, Surrey, England
1/72 vacuum-formed aircraft
 McDonnell F3H-2 Demon
 Supermarine 224
 Nakajima 91 Army fighter
 Brewster SB2A Buccaneer
 Gates Learjet 35 (C-21A)
 Beech King Air (C-12A Huron)

REVELL

4223 Glencoe Avenue, Venice, CA 90291

Aircraft
 1/48 F-18 Hornet with stores
 1/100 A-4E Skyhawk
 1/100 F-4E Phantom II
 1/100 F-104G Starfighter
 1/115 P-3 Orion
 1/140 C-130 Hercules
 1/144 C-5B Galaxy
 1/144 Space Operations Center
 (with or without Space Shuttle)
Autos
 1/25 '57 Ford Ranchero
 1/25 '34 Ford Roadster
 1/25 '51 Henry J
 1/16 Swamp Monster
Ships
 Coast Guard Cutter *Roger B. Taney*
 1/350 U. S. S. *New Jersey*
 H. M. S. *Bounty*
Miscellaneous
 Bucket Wheel Excavator 289
 16 Fantasy model/toys

SUPER SHIPS

3663 Atlantic Road, Lake Park, FL 33410
 Catalog free.
 1/72 *Nimitz* class carrier, Jan., \$895.00
TESTOR
 (including Italeri and Fujimi)
 620 Buckbee Street, Rockford, IL 61108-4891

1/72 aircraft
 AV-8B Super Harrier, Mar.
 F-5F Tiger II, Mar.
1/48 aircraft
 F-5A Freedom Fighter, Mar.
 P-47D Thunderbolt, Mar.
 F8F Bearcat, Mar.
 UH-1B Huey, Apr.
 AH-1 Cobra, Apr.
 T-38 Talon, Apr.
 A-6A Intruder, Apr.
 A-4E Skyhawk, Apr.
 F-15A Eagle, Apr.
 Lockheed YF-12A, July
1/35 armor
 Katyusha, Mar.
 Panzer IV-H, Mar.
 Elefant, Mar.
 Priest, Mar.
1/24 autos
 Mazda RX-7, Apr.
 Porsche 935, Apr.

THUNDERBIRD MODELS

Route 13, Box 257B, Fort Worth, TX 76119
 1/72 F-94C Starfire, Apr., \$6.00
 1/72 F-89B/D/H Scorpion, July, \$7.50
 1/48 Ta 152, Sept., \$8.00
 1/48 F7F Tigercat, Nov., \$9.00

299 MODELS

P. O. Box 55232, Seattle, WA 98155
 Send SASE for catalog.
 1/72 Nakajima Ki-115 Tsurugi, July, \$7.00

WAR EAGLE (includes Falcon Industries)

P. O. Box 255, New Baltimore, MI 48047

Falcon injection-molded aircraft
 1/72 F3D Skyknight
 1/48 He 162
War Eagle 1/48 vacuum-formed aircraft
 Martin B-57 Canberra, Feb., \$24.95
 F-100F Super Saber conversion, May
 Northrop F-89C Scorpion, July
 Curtiss P-6E Hawk
 Vought TA-7C/A-7K conversion
 Vought RF-8G conversion
 F-106B Delta Dart conversion

WHITE EAGLE VACU-FORM

P. O. Box 1834, Dearborn, MI 48121
 Send SASE for catalog.
 1/72 Boeing B-50D, Feb., \$21.95
 1/48 Beechcraft 18/C-45, Apr., \$18.95
 1/72 Boeing KC-97L, Mar., \$22.95
 1/72 Curtiss Condor, May
 1/48 S2F Tracker, June
 1/72 Douglas B-18 Bolo, July
 1/48 Grumman E-1B Tracer, Aug.
 1/72 Super Guppy 201, Sept.

WILLIAMS BROTHERS

181 Pawnee Street, San Marcos, CA 92069
 Catalog, \$1.00
 1/32 F9C Sparrowhawk

WINGS 72 & WINGS 48

3349 Wildridge Dr. NE, Grand Rapids, MI 49505
1/72 vacuum-formed aircraft
 Mitsubishi F1M2 Pete, Jan., \$7.95
 Mitsubishi J8M1 Shusui, Jan., \$5.95
 P-51H Mustang, Feb., \$6.95
 Blohm und Voss BV-155 V2, Feb., \$6.95
 Yak-6, Feb., \$8.95
 Lohner L, Mar., \$8.95
 Lockheed XF-90, Apr., \$8.95
 Fokker T.8W, May, \$9.95
 Yak-36 Forger, June
1/48 vacuum-formed aircraft
 Kawasaki Ki-10 Perry, Jan., \$9.95
 Thomas Morse S.4C Scout, Jan., \$9.95
 Yak-36 Forger, June
 Vought O2U-1 Corsair, June

Tools You Can't Work Without



Over 500 tools
and accessories
for the
hobbyist.
Send \$1.00
for catalog to:

Tools For Hobbys

P.O. Box 5438 Dept. B
N. Hollywood, CA 91616-5438

MURPHEY'S RULES

A series of accurate and easy-to-use rulers produced especially for scale modelers. Two scales on each ruler; four feet of one-inch increments. Permanent photoprocess on natural or black aluminum; 11 3/4" long!

RULE I—1/72 and 1/48

RULE II—1/35 and 1/32

NEW! RULE III—1/43 and 1/25 NEW!

Available for \$2.50 at quality hobby shops or mail order direct. Specify color; add \$1.00 p&p;

Ohio residents add \$0.14 sales tax.

Dealer inquiries invited.

MURPHEY MODEL PRODUCTS

P.O. BOX 8181

CINCINNATI, OHIO 45208



MINITANKS

OVER 150 DIFF. NUMBERS

IN STOCK FOR IMMEDIATE DELIVERY.
SEND SASE FOR ILLUSTRATED BROCHURE
DEALER INQUIRIES WELCOME

IMPORTERS & DISTRIBUTORS OF

NOCH SCENIC MATERIALS
BREKINA HO AUTOS
SCHABAK DIE CAST PLANES
STEVENS MILITARY MINIATURES

Stevens
International



P.O. BOX 126
MAGNOLIA, NJ 08049
609-435-1555

made from a copper alloy and are nickel, iron, or gold plated. Shapes include spades, chisels, needles, cones, pyramids, and blanks. A catalog and price list are available upon request.

Catalogs. The illustrated catalog from the Buckle Connection, 21323 Pacific Coast Highway, Malibu, CA 90265, shows the firm's airplane-theme belt buckles, tie tacks, lapel pins, stick pins, and caps.

Colonial Expressions by Gunther, P. O. Box 234, Cranford, NJ 07016, offers a free price list and information on its line of display bases.

Brochure No. 293NR from Foremost Electric Company, Route 6, Bethel, CT 06801, provides a general introduction to miniature power tools.

The 1983-1984 catalog from The Quartermaster, P. O. Drawer Y, St. Joseph, IL 61873, sells for \$3.00. It includes listings for kits, decals, figures, books, tools, adhesives, and paintbrushes.

Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, has released its 1984 aircraft catalog, which includes a 68-page addendum of new products. It sells for \$3.00.

For a catalog of aviation photographs, send \$1.00 and a large, stamped, self-addressed envelope to Scale Model Research, 418 East Ocean Front, B, Newport Beach, CA 92661.

Twentieth Century Imports, 2486 Baseline Road, Boulder, CO 80303, imports Japanese science fiction kits from Aoshima, Arai, Imai, Nichimo, and Takara. The firm's catalog sells for \$2.00.

A 106-page catalog of artist's materials is available for \$2.00 from Winsor & Newton, Inc., 555 Winsor Drive, Secaucus, NJ 07094. Winsor & Newton products are sold only through retail stores.

Miscellaneous. *Aircraft Modelworld* is a new monthly magazine for aircraft modelers and enthusiasts. Subscriptions outside the United Kingdom and Ireland are available for £13 from Clifford Frost Limited, Lyon Road, Windsor Avenue, Wimbledon SW19 2SE, England.

CBS Video Library, 1400 North Fruitridge Avenue, P. O. Box 1111, Terre Haute, IN 47811, has announced a new video series, *World War II with Walter Cronkite*. Included is film footage by cameramen from newsreel companies and the U. S. Signal Corps and footage drawn from archives around the world. Produced by CBS News, the series is available on videocassette or CED video disc.

John Fry Productions, P. O. Box 9444, San Diego, CA 92109-0140, sells aircraft photo postcards. A list of available postcards and a sample card will be sent upon receipt of a stamped, self-addressed envelope.

General Pencil Company, 3160 Bay Road, Box 5311, Redwood City, CA 94063, produces "The Masters" paintbrush cleaner and preserver. It comes in a hard-cake form that works with water. The company says the brush cleaner and preserver removes oils, acrylics, watercolors, stains, and varnishes from brushes; helps prevent paint buildup in the ferrule and hardening and buildup from acrylic paints; and conditions and preserves brushes. Four sizes of this product are available in retail stores: 1/4

ounce, \$.89; 1 ounce, \$2.95; 2 1/2 ounces, \$4.95; and 24 ounces, \$24.95.

Membership in the Great Lakes Miniature Fire Apparatus Association, P. O. Box 633, Youngstown, OH 44501, costs \$6.00 and includes a quarterly newsletter.

Phoenix Publications, Inc., has announced that the new address of *Model Ship Builder* magazine and the Ship Builder's Shop is P. O. Box 128, Cedarburg, WI 53012.

Four-wheel Model T trucks in metal and plastic are available from "Scenery Unlimited," 310 Lathrop Avenue, River Forest, IL 60305. The 1/64 trucks come in two versions: One has a removable top and an open rear door, while the other is a van type with the rear door closed. The trucks are available in different lettering schemes. Each truck sells for \$2.95 plus \$2.50 for postage.

Coming events. The IPMS Region I convention — Noreastcon XIII — will be held April 27 and 28 at the Old Mill Quality Inn, Veterans Memorial Highway, Ronkonkoma, New York. The theme of the convention is the 40th anniversary of D Day. For more information send a stamped, self-addressed envelope to Robert DeMaio, 52 Lawrence Avenue, Holbrook, NY 11741.

The 43rd annual show and exhibition sponsored by the Miniature Figure Collectors of America will be held May 11 and 12 at the Schwartz Field House, Widener University, Chester, Pennsylvania. Further information is available from A. W. Etchells, 315 South 6th Street, Philadelphia, PA 19106.

Midcon '84, the IPMS Region V convention, will be held May 18-20 at the Holiday Inn Central, adjacent to Interstate 80 in South Omaha, Nebraska. Contact Scott Sumson, P. O. Box 80894, Lincoln, NE 68501, for more information.

The World Airline Hobby Club is sponsoring Airliners International '84 on June 21-23 at the Marriott Hotel across from the St. Louis (Missouri) International Airport. Additional information is available from the World Airline Hobby Club, 3381 Apple Tree Lane, Erlanger, KY 41018.

Attention modeling club and chapter secretaries and newsletter editors: FINE-SCALE MODELER is compiling a list of organizations and publications devoted to modeling, to be published in a future issue of FSM. Please submit the following information to FSM Update no later than May 25: name of the organization and its publication; frequency of publication; areas of interest; complete address for the location of the club; and name, address, and phone number of a contact person.

Correction: An FSM Workbench Review on pages 12 and 13 of the March/April 1984 issue erroneously stated that Pegasus Models, Strebor House, Thurston Park, Whitstable, Kent, England, had "risen from the ashes of the now-defunct Veeday Models." Chris Gannon, proprietor of Pegasus Models, has informed us that his firm was formed when Veeday was still running, and that his only connection with Veeday was that he made patterns for a few of the Veeday kits. FSM should not have included the statement in its review, and apologizes to Mr. Gannon for the error. **FSM**

Special Offer: Save \$5.00 When You Order The Forthcoming "Book of the Year," **Panzer Colors III**, and the **1985 Aviation Art Appointment Calendar!**

Save \$5.00 When You Order Before June 1, 1985

6253

Panzer Colors III

\$8.95

by Bruce Culver



**Now Only
\$5.95**

**96
Pages**

The third and final volume in Squadron/Signal's trilogy on WW2 German vehicle camouflage and tactical markings, **Panzer Colors III** covers the "elite" units of the German Wehrmacht, as well as the armored formations of the Army not covered in **Panzer Colors II**.

The extensively researched text and captions describe the unit symbols and markings used by the Heer (Army) Panzergrenadier divisions, the "Grossdeutschland" formations, and the Sturmgeschutz battalions. The armored units of the Waffen-SS are covered in detail, followed by Tiger tank battalions in both the Army and Waffen-SS, and, finally, the "Hermann Goring" armored formations of the Luftwaffe, including histories of each unit.

In addition to the thousands of words of text and captions, **Panzer Colors III** vividly illustrates the markings of these "elite" German armored units with more than 200 combat photographs and 16 pages of color art, illustrating dozens of vehicles plus unit markings for each unit described in the text. Much of this information has never been published before. If you act right now, you can purchase **Panzer Colors III** for only \$5.95, \$3.00 below its retail price. Don't miss this exceptional offer!

**16 Pages
of Color**

**Regular
Price \$8.95**

Books and Calendars will be mailed upon publication, June 1, 1984.

ORDER TODAY — ORDERS CAN NOT BE ACCEPTED AFTER JUNE 1, 1984!

DETACH AND MAIL ONLY TO SQUADRON/SIGNAL PUBLICATIONS - THIS IS YOUR ORDER FORM - PLEASE PRINT CLEARLY

I wish to take advantage of your special prepublication prices.

Please send me the following Books and Calendars:

- _____ **6253 Panzer Colors III** **\$5.95**
_____ **6985 s/s 1985 Aviation Art Appointment Calendar** **\$3.95**
Postage: 1 item — \$.90
2 items — \$1.25
3 or more items — \$1.50
Sales Tax: Texas residents add 6%

I enclose _____ in a check or money order in U.S. Funds including postage & tax.

Checks and money orders MUST be made payable to **Squadron Signal Publications**.

**Squadron/Signal
Publications, Inc.**
Dept. 23
1115 Crowley Drive
Carrollton, Texas 75011-5010

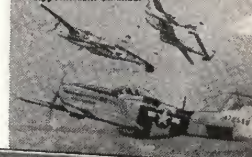
Name _____
Address _____
City _____
State or Country _____ Zip Code _____

**Buy Two! — One for
Appointments and one
for Framing.**

6985

1985

squadron/signal
Aviation Art
Appointment Calendar

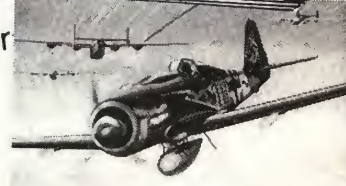


**Now Only
\$3.95**

**Years in
the making**

**12 "in action" Lithographs
by Lou Drendel and Don Greer
Suitable For Framing.**

**Regular
Price \$5.95**



Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so FSM readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

Kit: No. 02, Douglas A-1H Skyraider
Scale: 1/72
Manufacturer: Tsukuda Hobby, Japan
Price: \$4.00.

THE WORKHORSE of the U. S. Navy from the late 1940s, the "Spad" saw action in both Korea and Vietnam. This is the first new kit of the A-1 in this scale in over 10 years and the first aircraft kit (kit 01 is the same kit with different markings) from Tsukuda.

The 56-piece kit is molded in gray and clear styrene and features two-position dive brakes on the fuselage sides, but curiously, no dive brake on the bottom of the fuselage. The panel lines are engraved and are a little heavy for the scale. The instructions are in Japanese but the diagrams are clear and easy to understand. The decal sheet offers markings for aircraft from VA-176 and VA-52 and is well printed.

The model represents an A-1H (AD-6) or A-1J (AD-7) which had appliqué armor plate on the sides and bottom of the fuselage



All photos, FINESCALE MODELER: A. L. Schmidt or Paul A. Erier, unless otherwise credited.

to increase protection for the pilot. It could be converted to earlier single-seat versions by sanding these plates off. Underwing stores include a fuel tank, bombs, 6-tube rocket launchers, and two miniguns.

I had no major problems building the kit. The fit was good with a minimum of putty required in the wing-fuselage joint. The two-piece cowl needed a little extra attention when I attached it to the fuselage; I had to press it on and rely on super glue to keep it in place.

There are some small ridges inside the

cowl that don't appear on any photo I've seen of the Skyraider and because of their location they are difficult to remove. The canopy is thick and heavily framed but fits well to the fuselage. The horizontal stabilizers are also too thick.

All in all I was pleased with the model. It was simple to build, taking only 10 hours including painting. The finished model scales well with the information in Squadron/Signal's *Skyraider in Action* and the attractive markings make it a real eye-catcher. I hope to see more from Tsukuda.

Paul Boyer



Cliff T. Davis

Kit: No. 2017, Brabham BT50 BMW Turbo
Scale: 1/20
Manufacturer: MRC-Tamiya, Model Rectifier Corporation, Edison, NJ 08817
Price: \$14.98.

THE MARRIAGE OF BMW's 1.5 liter four-cylinder turbocharged engine and the rugged Brabham chassis and shell produced the BT50, which won the Canadian Grand Prix in 1982. The small turbo engine and lightweight car could well be the future of Formula 1 racing.

MRC-Tamiya's kit contains 104 styrene pieces along with four vinyl tires, a formed wire tie rod, four polyethylene wheel inserts, and a length of vinyl tubing for the engine wiring. A five-part driver figure included features a tinted, clear face screen on the helmet. The 15-step instruction sheet is

easy to follow and the four-color decal is well printed, although the white lettering isn't opaque enough to cover the dark blue trim on the shell.

The kit went together without any major problems. The engine lacks air ducts from the turbocharger to the intake manifold, but after detailing the engine I found that once the shell is put on, the engine is covered almost completely. The only effective way to display the engine would be to cut the shell apart, cementing the cockpit portion to the chassis, but leaving the engine housing removable. As a one-piece unit, the shell didn't fit onto the chassis too well and I had to tack it on with super glue to get it to fit.

I painted most of the parts while they were still on the sprues, touching up the attachment points just prior to installation on the model. I used a grinder on a Dremel tool

to rough up the tires. My model is painted with Testor Gloss white and Floquil Dark Blue (M50), which is a perfect match for the blue decal trim, and I used Tamiya's acrylic clear gloss over the decals and trim. I had to remove 1 mm from the straight edge of the nose fairing decals Nos. 1 and 3 since they overlapped and didn't leave room for decal No. 14.

It's impossible to check the scale because the bodies of race cars could be modified from one race to another. I think the model is an accurate replica of the car as it appeared during the 1982 racing season and it looks realistic. With the exception of the shell, the kit went together easily. I spent 50 hours on mine, some of that cleaning fine mold marks and waiting for the paint to dry. Even a newcomer to race car modeling should enjoy this kit.

Cliff T. Davis



Kit: No. Y001, General Dynamics F-16A Fighting Falcon

Scale: 1/48

Manufacturer: Hasegawa, imported by Minicraft Models, Inc., 1510 West 228th St., Torrance, CA 90501

Price: \$11.95.

THE LATEST PRODUCTION changes to the F-16 are reflected in this new kit. The larger horizontal stabilizers are provided along with the standard, blunt-end drop tanks and assorted ECM blisters.

The 94-part kit is molded in light gray and tinted clear styrene. The detailing is engraved, a departure from the usual fine, raised detailing of previous Hasegawa kits. The ten-step instructions are printed in Japanese and English and include a painting guide with Federal Standard paint numbers. Decals include markings for two U. S. A. F. aircraft and one Royal Netherlands Air Force machine.

One noteworthy part is the two-part canopy which has been accurately molded with a cross section in excess of 180 degrees. Such a molding requires a three-part mold which leaves a seam line through the top of the hinged portion, but it's not a heavy one and was easily sanded and polished away.

The cockpit interior is nicely done with a good pilot figure. I had a little trouble getting the pilot's hands to line up with the console-mounted throttle and control stick, and the intake, wings, and radome required work to improve the fit where they joined the fuselage. I left off the landing gear, underwing stores and pylons, horizontal stabilizers, and ejection seat until after painting. I airbrushed the model with Testor Model Master paints. The decals were thick; the edges remained visible, even after two clear overcoats.

The completed model scales perfectly with the 1/48 scale drawings from Detail and Scale (No. 48-08). I spent 25 hours on the kit, but I took my time — it could be built in less time without any major snags.

Randy Fields

Kit: No. MM-126, M247 Sgt. York

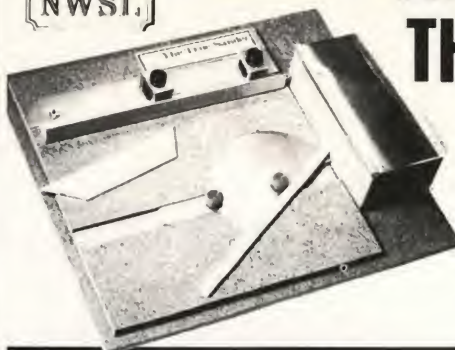
Scale: 1/35

Manufacturer: MRC-Tamiya, Model Rectifier Corporation, Edison, NJ 08817

Price: \$19.98.

THE SGT. YORK is the U. S. Army's new anti-aircraft tank based on the M-48 chassis. The main armament is a pair of radar-directed 40 mm cannons.

NWSI



A NEW TOOL FROM THE MAKERS OF THE CHOPPER:

THE TRUE SANDER

NEW! For Modelers Working In Any Scale:

A tool in the tradition of The Chopper that provides accurate, quick finish sanding of end cuts on wood or plastic parts for fine fit. The adjustable angle guide allows you to accurately repeat any angle for proper fit on mitred corners as well as square cuts. Also included are pre-set 30, 45 & 60 degree mitre guides. Unlike some motor powered sanding tools, The True Sander gives you that delicate touch needed for working with small parts.

57-4 THE TRUE SANDER

\$17.95

GOT YOUR COPY OF THE NWSI TIMES YET?
IT'S AT YOUR DEALERS & IT'S FREE IF UNABLE
TO LOCATE, SEND A LARGE SAE w/ 2 STAMPS

NorthWest Short Line
BOX 423 SEATTLE, WASHINGTON 98111

CHALK-EZ Weathering Sets

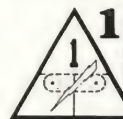
We feel this to be the finest set of chalks available in selected weathering colors. Chalk-Ez is an artists grade chalk, not a blackboard chalk. All colors are blendable to create unlimited shades.

Weathering Set #101: A ten-piece set containing dark brown, rust, white, black, gray, light brown, and the four primary colors of blue, red, yellow, and green.

Accent Weathering Set #102: A ten-piece set containing white, black, and eight new colors selected to give the hobbyist even greater flexibility with his weathering projects.

Each set sells at \$4.98 — individual replacements at \$0.78. See your local hobby dealer. If unavailable, add \$1 for postage and handling.

HOBBY HELPERS
1512 Balmoral Ave.
Westchester, IL 60153



1st Armored Model Supply Company

Mail Order Only

★ HEADQUARTERS ★

For

SUPER-DETAILERS

&

SCRATCH-BUILDERS

• Grill-Pak • Poly-Rod • Nuts & Bolts

• Scratch-Strip • Sheet Styrene

Send \$1.50 for 1983 catalog.

**1st Armored
Model Supply Company**
P.O. Box 1706, New Rochelle, NY 10802

**Waldron
Model
Products**

1358 Stephen Way
San Jose Ca. 95129
(408) 252-7422



THEY'RE HERE (at last). The F-14 Cockpit Placard Set. Now you can do that beautiful Tomcat right. 1/32nd set \$18.50, 1/48th set \$10.15. See them at your dealers, or order direct.

New! New! Jet Mirrors in 1/72nd, 1/48th or 1/32th scales. \$5.00 per set each scale. (6 mirrors per scale in each set).

Add 10% of order, postage and handling. For fastest return include postal money order. Foreign orders add 15% of order. International money order or check drawn on U.S. bank for U.S. funds. Calif. residents add 6.5% state tax.

Please send 50¢ for flyer.

DEALER INQUIRES INVITED.

RIVERSIDE HOBBIES

PLASTIC MODELS FROM AROUND THE WORLD

AIRCRAFT MONSTERS SHIPS
ARMOR MOTORCYCLES SPACESHIPS
CARS ROBOTS TRAINS
GUNS SCI-FI TRUCKS

Send \$2.00 for complete catalog
6407 Riverside Blvd., Sacramento, CA 95831

AIRBRUSHING AND MORE



- ☐ **Airbrushing and Spray Painting Manual**, 175 pp, illus., \$13.95
- ☐ **The Glassfibre Handbook**, 160 pp, 150 illus., \$13.95
- ☐ **Secrets of Ships in Bottles**, 72 pp, 65 illus., \$2.95

Add \$1.50 post/handling for 1st book; 75-cents for each additional book. AZ residents add 7% sales tax. MasterCard/Visa accepted; include account number and expiration date. Please send SASE (#10 envelope) for a full listing of titles. **Dealer inquiries invited.**



AZTEX Corporation
Box 50046, Dept F-12
Tucson, AZ 85703-1046

One of the largest selections of plastic kits in the state with over 2000 square feet of aircraft, cars, trucks, and military models.

Plus one of the largest selections of die cast vehicles anywhere.

Open every night til 8 p.m.

Master Charge/Visa accepted.

"You'll love the prices, too!"

HAROLD'S PLACE, INC.
522 Chestnut St., Lynn,
MA 01904



Jeff Ollian

The kit contains 266 parts molded in tan styrene with black polyvinyl tracks. A small four-color decal includes markings for both summer and winter camouflage schemes. The molded-in detail is above average and typical of MRC-Tamiya quality. The new T142 tracks are well done and will come in handy for conversions of other current U. S. armor. One well-detailed figure is provided.

The main gun mount features an elevation friction lock that keeps the guns in position. The rear grille doors are well done and small details, such as handles and lift rings, are molded separately — a step up for MRC-Tamiya. The 12-step instructions are clear and easy to follow, and the box art helps in painting the model.

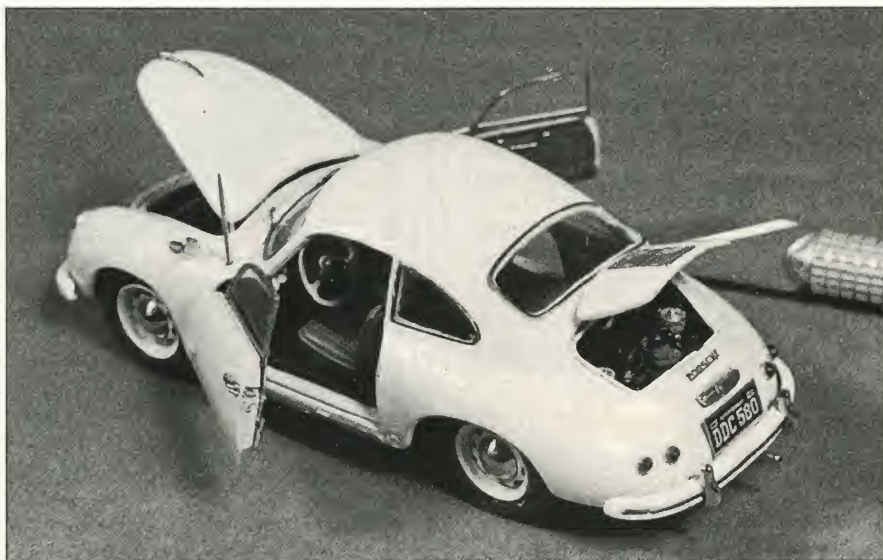
The kit went together well, with only a couple of exceptions. The rear doors (part No. B-9) and the fender skirts (parts Nos. B-

10, 11) had to be filed and sanded for a perfect fit. The radar base (parts C-22, 23, 27, 28) also required minor sanding.

I built the model in subassemblies, leaving off the wheels, guns, cables, and radar unit until after painting. After opening accessory mounting holes, I assembled the upper and lower hull. I painted the model with Testor Model Master paints and then dry-brushed to bring out the detail. The kit scales perfectly with the information in Steve Zaloga's *Modern U. S. Armor*.

I feel that this kit is the best offering yet from MRC-Tamiya. A novice tank modeler who has built a few kits should enjoy it, and experienced modelers may want to take advantage of the time saved in construction to do some superdetailing. I spent 14 hours building mine, about average for an out-of-the-box model.

Robert J. Skurda



Wayne E. Moyer

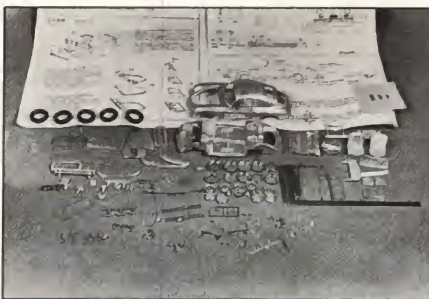
Kit: No. 4, Porsche 356A

Scale: 1/43

Manufacturer: Bosica, Italy, imported by Valley Plaza Hobbies, 12160 Hamlin Street, North Hollywood, CA 91606

Price: \$69.95.

THE PORSCHE 356 was the smooth-lined predecessor of today's familiar model 911. The rear-engined German sports car was built as the model 356 in 1953, and was followed by the 356A from 1955 to 1959. Interestingly, the 356A Speedster featured a



Wayne E. Moyer

4-cylinder engine that was rated at 75 hp. Compare that to the current Porsche 911 Turbo's 6-cylinder engine that cranks out over 300 hp!

Bosica's kit features over 130 pieces molded in white metal, and stamped or photoetched brass, along with clear plastic windows and rubber tires. A black-and-orange decal sheet is included.

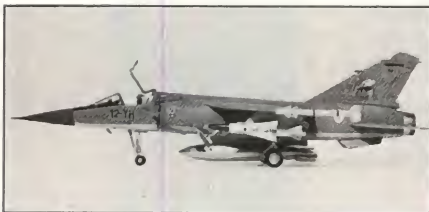
The engine and transaxle units are beautifully cast. The doors, hood, and trunk are stamped brass while the inner door panels are photoetched brass. The detail parts—hinges, trim, handles, and grilles—are photoetched brass and are exceptionally well done. The instructions use exploded views which sometimes make it difficult to find precise part attachment points. English captions are basic but understandable.

Assembly was time consuming, but easier than I had figured. I prepainted as many parts as I could, then followed the instructions carefully. The large number of tiny (though sturdy) parts occasionally requires working with a magnifier.

Care was required in the final fitting of the body. When the body was off the chassis, everything fit and closed well, but after mounting the body the driver's door wouldn't close properly and left a considerable gap. Adjustment of the hinged doors, hood, and trunk is difficult after the body is mounted. The precut windows fit with only minor trimming and looked good after an application of Future acrylic floor shine inside and out.

The kit scaled well with the information in Michael Cotton's *Porsche*, and Langworth's *Porsche—A Tradition of Greatness*. The appearance of the finished model is enhanced considerably by the delicacy of the detail parts and trim. The extra detail caused me to spend more than 30 hours on this kit, more than my average time, and I recommend it to modelers who have a few years of experience building 1/43 scale metal car models.

Wayne E. Moyer



Kit: No. D18, Mirage F.1C

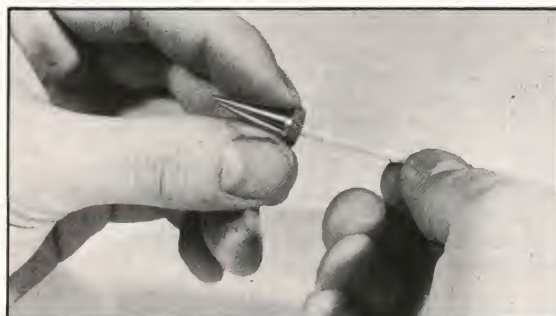
Scale: 1/72

Manufacturer: Hasegawa, imported by Minicraft Models, Inc., 1510 West 228th St., Torrance, CA 90501

Price: \$5.50.

FineScale MODELER

Modeling information, instruction—for you!



Solutions to your modeling problems—in "FSM Clinic." Paul A. Erler.

In FINESCALE MODELER, we provide the information and instruction you need for skilled modelbuilding. With useful columns such as "FSM Looks at New Products" and "FSM Update" we keep you in-the-know about hobby products; in our how-to-do-it features we offer challenging modeling projects and show you, step-by-step, how to complete them; in "Tips and Techniques" and our new "FSM Clinic" we provide you with creative modelbuilding methods and help you with modeling problems. Six times a year, FINESCALE MODELER can bring the enjoyment of scale modeling right to your doorstep. Make FSM your choice—subscribe today!

SUBSCRIBE!

DEPT. 3358, FINESCALE MODELER

1027 NORTH SEVENTH ST., MILWAUKEE, WI 53233

YES! Enter my subscription to FINESCALE MODELER starting with the ☐ next issue or with the _____ issue. This is a ☐ new; ☐ renewal subscription.

Enclosed please find:

☐ \$11 for one year (outside the U. S., \$14)
☐ \$20 for two years (outside the U. S., \$26)

☐ MASTERCARD

NAME _____

CHARGE TO: ☐ VISA EXP. DATE _____

STREET _____

CARD NUMBER _____

CITY _____

SIGNATURE _____

STATE, ZIP _____

Single copy price: \$2.25; outside the U.S., \$2.75

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet.

© KALMBACH PUBLISHING CO.

THE MIRAGE F.1C currently serves the Armée de l'Air as a high-altitude interceptor, but the aircraft also has ground-attack capability. The shoulder-mounted swept wing was a departure for Dassault-Breguet, whose prior aircraft featured low-mounted delta wings.

Hasegawa's kit contains 40 parts molded in gray and clear styrene. The panel detail is fine, raised lines and well executed; the molding of the afterburner vents is particularly well done. The highly detailed decal is well printed and gives markings for F.1s of E.C 1/5, E.C 1/12, and E.C 1/12 at the 1979 Tiger Meet. The three round colors are printed separately, allowing the modeler to align them in proper register. This is a problem, though, because the resulting cockade is too thick. The instruction sheet is printed in English and Japanese and is easy to follow. Unusual additions for Hasegawa are a well-molded standing pilot figure and a boarding ladder.

There were only two minor problems in construction. The fuselage halves needed a thin application of putty at the joint and the moldmakers forgot to make a hole in the cockpit floor (part No. C3) for mounting the nose gear. Besides these minor flaws, the kit went together without further trouble.

The finished model scales perfectly with the dimensions given on the instruction sheet. I spent 15 hours on the kit, about average for me. This is an excellent kit and I can recommend it even to beginners.

Dennis Moore



Kit: No. 1405, Snap Tite '84 Corvette

Scale: 1/24

Manufacturer: Monogram Models, Inc., Morton Grove, IL 60053

Price: \$5.50.

MONOGRAM'S SNAP TITE kit is the first model to be released of the new Corvette. The call for a smaller car spelled the end of its larger predecessor, whose body style was virtually unchanged from 1968 to 1982.

The kit contains 32 injection-molded parts in red, chrome, and tinted clear styrene, and vinyl tires. Detailing is very good considering that the number of parts has been kept to a minimum for younger modelers; the underbody and engine detail are well executed and are nearly as good as conventional kits in this scale. The rear window has a simulation of the defroster wires

scribed into its inner surface. The instruction sheet was easy to follow.

I built the kit straight from the box without paint or extra details. The fit was average; I had trouble getting the clear piece to fit against the rear body so I used Hot Stuff to attach it. The openable hood did not close tightly on the left side, and the side-view mirrors did not fit easily into the doors. It is easy to get the wheel covers mixed up—a careful study of the instructions and photos shows the finned covers to be different on each side. The decals fit well but I don't know if there is a trim package like this available on the real car.

The Corvette took me one hour to complete—perfect for breaking the monotony of endless detailing and painting. I recommend it to anyone with a passion for sharp-looking cars.

Paul Boyer
FSM



Before You Start, Plan Your Finish

With The New Floquil Military Color Series

The hours you spend making your model authentically accurate are finalized when you apply the finish. Be sure your hours of attention become years of triumph by selecting the best finish available.

With the New Floquil Military Color Series, you'll discover not only a broad selection of general purpose and weathering colors—but also authentically matched United States and German WWII Colors plus a range of 26 of the most needed Federal Standard 595A Colors.

This revolutionary new series comes with all the built in qualities you've come to expect from Floquil. Smooth, easy application by brush or airbrush; permanent, skin tight adhesion that enhances detail, and preciseness of color you can rely on.

The New Floquil Military Color Series—unsurpassed quality; unsurpassed performance and... the best value. Ask for them at your favorite dealer and use them on your next project. From start to finish... you'll see the difference!

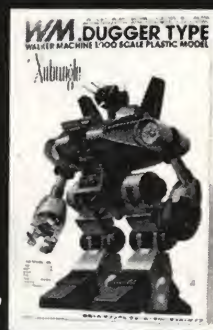




Floquil-Polly S Color Corp.
Route 30N
Amsterdam, N.Y. 12010

An **RPM** Company

For complete information send SASE. Include \$1.50 for color chart with actual chips.



H O R I Z O N

**Hobbies & Toys Distribution
428 BOYD ST. LOS ANGELES, CA 90013**

**We import complete selection of Japanese Science Fiction
Plastic Models and Diecast Toys.**

Please call Dealers Information to HORIZON: (213) 687-0853.

Great airbrushing is for the birds. The Binks birds.

The Raven and Wren will do just about anything an artist or craftsman will want to do. And, do it easier.

That's because they're precision engineered for great performance. And because they're made with the finest materials available. (We even made them to be serviced in the field, by you.)

They're strong, versatile, and reliable... the only airbrushes you'll ever need.

The double-action **RAVEN**

The single-action **WREN**

The Raven airbrush...for photo retouchers, artists, animators, architects, and fine model builders.

The Wren airbrush...for hobbyists, background work, auto refinishers, and general industry. A great choice for your first airbrush.



Binks offers complete airbrush outfits, air compressors, oil and water traps, air regulators, hose, canned propellant, and more. For more information on our complete line, write for brochure A59-12 FS

Binks Manufacturing Company
9201 W. Belmont Ave., Franklin Park, IL 60131

BINKS

Binks is a registered trademark of Binks Manufacturing Company

VOLUME 8 NUMBER 1 OCTOBER 1982

SCALE Aircraft Modelling 95p

INSIDE
FREE DECAL SHEET
NORTH AMERICAN HARVARD AND A16 TEAM MANEUVERS

THE INTERNATIONAL MAGAZINE FOR SCALE AIRCRAFT MODEL BUILDERS

ANNUAL SUBSCRIPTION \$38.00
Including postage

Colour records
jet-powered fleet
warplanes. Micro warplanes.

THIS MONTH
Converge to

SCALE Aircraft Modelling

BACK ISSUE SERVICE AVAILABLE
Send for full list

DEALER ENQUIRIES WELCOMED

Which is the only modeling magazine in the world to give its readers a free decal sheet?

Yes, Scale Aircraft Modelling provides its readers with a superb aircraft decal sheet every other issue linked with one of the lead articles. Apart from that it has the best camouflage and markings drawings, detailed histories and plenty of how-to-do-it information and up-to-date reviews of the latest kits, decals and accessories. It's a must for all aircraft modelers. Check your local store or take out an annual subscription, now!

SCALE AIRCRAFT MODELLING
226 HIGH STREET,
BERKHAMSTED, HERTS,
HP4 1AD, ENGLAND
or from Bill Dean Books Ltd., 166-41
Powells Cove Boulevard, Whitestone,
New York 11357

NEW in Series 77's "The Americans" series



A/32
Tiger Zouave
1861.



A/33
Commander
U.S. Navy
1945



A/34
Captain
Lt. Artillery
1863



A/35
Navy Pilot
1970

90mm kits: Foot, \$21.95 and \$24.95 * * each. Mounted \$74.95 each.

FAST, EFFICIENT MAIL ORDER SHIPPING. DEALER INQUIRIES WELCOME.

Illustrated catalog of all our miniature kits is available for \$4.50 at your hobby store or \$4.50 plus \$1.50 shipping direct.

SERIES 77 miniatures

7861 Alabama Avenue, #14, Canoga Park CA 91304, U.S.A., Telephone: (213) 340-5117



FSM invites manufacturers, importers, and distributors to submit product samples. Information on new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

FSM readers should check their local hobby shops for the items in this column before writing directly to the manufacturers.

FINESCALE MODELER staff photos by
A. L. Schmidt and Paul A. Erler



Dry-transfer signs

More than 40 dry-transfer signs are included in the D245 Series One set from Woodland Scenics, P. O. Box 98, Linn Creek, MO 65052. The 4" x 5" sheet is printed in five colors and includes old-time signs and posters that can be applied to buildings, billboards, or vehicles in any scale. The set sells for \$4.98.



Landscaping mat

Enya Model Products, Altech Marketing, Inc., P. O. Box 286, Fords, NJ 08863, offers Grassmat, a multicolor synthetic grass landscaping base suitable for dioramas. Grassmat conforms to irregular contours and is available in 32" x 50" rolls (\$5.95) and 49" x 99" mats (\$12.95).

Display cases

Brufen Products, P. O. Box 334F, Elgin, MN 55932, offers custom-made acrylic display cases and wooden bases. The cases come either assembled or in kit form and prices range from \$7.83 to \$95.53 depending



on size. The large case shown above measures 12 1/4" long, 4 1/2" wide, and 5 3/4" high. The smaller case is 5 1/2" long, 3" wide, and 3 3/4" high. Both cases are made from 3/16" clear acrylic. A price list and idea brochure are available for \$1.00

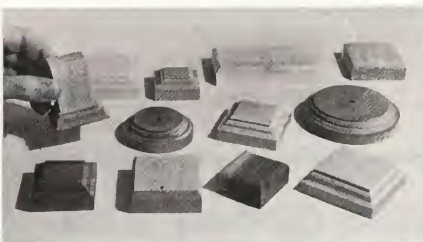


Figure bases

The Base Camp, 33 Sheridan Avenue, Metuchen, NJ 08840, offers hardwood bases for unmounted and mounted figures and small dioramas. Sizes from 1 3/4" square to 7" x 9" are available in maple, mahogany, and walnut. Prices range from \$.75 to \$10.00.



Double-action airbrush

American Airbrush, 900 Oak Spring Lane, Libertyville, IL 60048, offers the model KX200 airbrush set. The airbrush is a double-action, internal-mix type, capable of using any hobby paint. A fine thread adjusting screw permits preset paint flow levels. The set includes an 8-foot braided air hose, two 1-ounce bottles, two 1/2-ounce bottles, two siphon caps, and a hanger. It is available direct from American Airbrush for \$43.00 plus \$3.50 postage and handling.



Casting alloys

Small lead and lead-alloy ingots are available for miniaturists who cast their own figures and accessories. Arthur S. Green makes custom-ordered ingots in sizes as small as one pound. For price and shipping information, write Arthur S. Green, Suite Five, 485 South Robertson Boulevard, Beverly Hills, CA 90211.



Evergreen tree kits

Scentare, Inc., P. O. Box 27929, Tempe, AZ 85282, offers realistic pine trees for dioramas. The kit contains tapered wooden dowels, paper trunk texture, synthetic fiber foliage base, and a packet of ground-foam foliage. The height of each tree can be varied by simply cutting off the base of the trunk. Shown is a tree made from Kit No. 1600 (\$19.95) which provides material to make six 16" pine trees. Kit No. 1601 (\$64.95) makes 24 16" trees, Kit No. 800 (\$19.95) makes 12 8" trees, and Kit No. 801 (\$64.95) makes 48 8" trees.

FSM

model Shipwright

The International Quarterly Journal for Ship Modelmakers

Do you strive for the perfect model?

Do you seek fresh ideas to improve your technique and need a source of reliable information with clear illustrations and detailed plans?



Available by annual subscription from:

Conway Maritime Press Ltd (Dept FSM/1),
24 Bride Lane, Fleet Street, London EC4Y 8DR.

£12.00 per annum for four issues (Overseas £16.00,
US \$26.00) including post and packing.

Every quarterly issue of *Model Shipwright* is packed with a wide range of original articles contributed by leading ship modelmakers the world over. The scope is varied and carefully balanced to appeal to readers of all interests and levels of ability.

We aim to provide you with the very best and most detailed reference possible in a high quality journal of permanent value. Each issue contains up to 12 articles and over 100 illustrations.

**FREE SAMPLE COPY
AVAILABLE**
Send for yours
today

BADGER gives you great tips.

The BADGER Model 150 is the perfect tip and the perfect tool for finishing scale models. This finely crafted dual action air-brush is ideal for achieving special effects such as smoke, fire and weather damage, etc. The Model 150 offers a choice of three head assemblies for more versatility in the type of materials you can spray. The bottom feed feature makes it suitable for left or right handed modelers.

BADGER'S Foto/Frisket Film is a transparent self-adhering masking and stenciling material. It is ideal for customizing and

making your own logos, decals and insignias. Great for camouflage techniques. Available in convenient sheets and rolls.

BADGER'S Fluid Microscreen Filter is designed for use with all air-brushes that use jars or bottles. It stops paint or foreign particles that might pass through the air-brush and cause clogs. The filter slides on and off easily for quick cleaning.

BADGER gives you even more great tips in their Hobby & Craft Guide to Air-Brushing.

Two camouflage tips are shown here.



1. Using a mask as shown, spray through the openings, move the mask over the next area to be sprayed. Hold the mask at least 1/4" from surface for a soft edge effect.

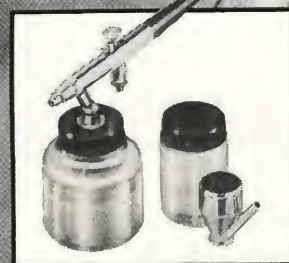


2. Another way to achieve the mottled effect is by free-hand spraying. Set the spray width to fine and hold the air-brush close to the surface using tight, erratic hand motions.

Ask for BADGER products at your local hobby, craft or art store or write Dept. 8413 for full color catalog BA 300 Vol. 6. Please enclose \$1.00 to cover postage and handling.

Prices slightly higher in Canada.

©BACO 1983



BADGER AIR-BRUSH CO.
9128 W. BELMONT AVE. - FRANKLIN PARK, IL 60131
Dist. in Canada by:
HOBBY INDUSTRIES - 24 Ranson Drive - Rexdale, Ontario M9W 1B4



FROM THE EDITOR

More FSM firsts

NO MAGAZINE WORTH ITS SALT offers the same mix of features and columns in every issue, and that's particularly true of a new magazine like FINESCALE MODELER. We've got to keep changing in an effort to keep FSM fresh and to find what you readers really like.

This issue includes three firsts — features and types of presentation that we haven't tried before. On page 18 you'll find our first "FSM Showcase Special Feature," a greatly expanded version of our regular Showcase. We won't be running every Showcase as a Special Feature, but I hope you'll agree that Mark Waki's 1/32 scale Fw 190D is a spectacular model that deserves extraordinary treatment.

Next comes Dave Reed's introductory article on light emitting diodes (LEDs). Dave explains how to incorporate simple electrical and electronic devices into your models to add light and animation — and interest and realism. While FSM isn't about to become an electronics magazine (there are plenty of those already!), we'll occasionally delve into subjects like electronics in an effort to offer you a better *modeling* magazine. Our excursion into LED country is the first such effort.

The article that begins on page 32 kicks off a new department: "FSM Clinic." No, we don't want you to send in your broken models for repair, but we'll do our best to solve your modeling problems (or to refer them to experienced modelers who can). Associate Editor Paul Boyer has started by answering questions we've received over the past six months, but in the future we plan to forward some of them to qualified modelers around the country. If you've got a modeling problem, send it in!

These won't be the last new features we add, and the magazine will continue to evolve into what you readers want if you'll tell us what new things you'd like to see. We look forward to your letters, and the staff reads every one of them. Let us hear from you soon.

Bob Haydel

Editor

FineScale
MODELER

NEXT ISSUE

FEATURES



"The Mayflower, Goodyear style." Gifford E. Hamilton.

The July/August issue of FINE-SCALE MODELER will include a potpourri of fine features. Heading the list will be a lighthearted piece on a lighter-than-air subject: a conversion that turns Revell's semi-toylike blimp kit into "The Mayflower, Goodyear style," an accurate and attractive scale model. Included is how-to-do-it information on building a mooring mast and diorama base to display the model. More diorama techniques will be explored in a feature on modeling jungle foliage, and you'll find conversion tips you can use for any type of auto modeling in an article on building a 1/20 scale Duesenberg Sport Phaeton.

DATA/DRAWINGS

If you like unusual aircraft, you'll love the next FSM! In addition to a conversion article on modeling the big bird in 1/72 scale, the July/August issue will include elevation drawings and templates for building the Aero Spacelines Model 201 "Super Guppy," as well as detail photos of the gigantic transport that was converted from a Boeing Strato-cruiser. You'll also find hard-to-find research data on Royal Australian Air Force Canberra bombers, the "Magpies" built Down Under. Don't miss the fun!

**ALL IN
JULY/
AUGUST
FSM!**

The plane can be displayed as if ready for takeoff with all doors and panels closed and the canopy open.



FSM SHOWCASE SPECIAL FEATURE

Mark Waki's 1/32 scale Fw 190D-9

There's more to this magnificent scratchbuilt model than first meets the eye

MARK AND MATTHEW WAKI of Salt Lake City, Utah, adhere to two "Waki rules" when building aircraft models: (1) All detail parts must be the same scale as the rest of the model, and (2) All moving parts must operate in the same way as on the full-size airplane. As a result, their planes look good whether posed as if ready for flight or displayed with panels opened to reveal interior details.

Mark's 1/32 scale Fw 190D-9 shows how observing both rules can produce a prizewinning model (it took Best of Show at the 1982 IPMS National Convention) that becomes more interesting the more closely you look at it.

The model represents a typical Focke-Wulf Fw 190D-9 and carries the markings and color scheme of a plane in service in December 1944. Mark used a number of parts from three Revell 1/32 scale Fw 190D kits (No. 215) and one Hasegawa 1/32 Fw 190A kit (No. S10), but at least 90 percent of the model is scratchbuilt — the kit parts served primarily as masters from which Mark

vacuum-formed or stretch-formed thinner replacements.

Starting at the engine, let's examine the highly detailed assemblies that make the model so interesting. Note first that the engine doors open, close, and latch. Mark says, "The engine doors are hinged as on the actual aircraft to expose the scratchbuilt engine and engine compartment. With the exception of three sizes of Grandt Line HO railroad bolts and one size of Kemtron pipe unions, all components in this area are scratchbuilt.

"The vacuum-formed doors are held closed by three functional latches on the lower panels and six (three on each side) functional sliding locks on the side panels. All locks and latches in this area actually hold the doors in place. This is necessary because these large, thin doors do not maintain exact form unless secured."

The drawing on page 21 shows how Mark assembled the Junkers Jumo 213 A-1 liquid-cooled, inverted V-12 engine by gluing together pieces of sheet plas-

tic and carving plastic blocks to the shapes of major engine components. The photo of the partially assembled engine shows that these parts were painted as work progressed. Mark vacuum-formed the supercharger intake, using a kit part as a mold, thereby attaining scale thickness.

The cowl gun cover is hinged and opens to reveal two MG 131 guns. Each gun barrel was turned on a lathe, then the perforated .001" brass barrel jacket was added. The individual rounds of 13 mm ammunition are also turned brass, while the ammo feeds are .0025" sheet plastic — the rounds actually fit inside the feeds. Mark's rough drawing shows how he worked out all dimensions in decimal inches before preparing the barrels and adding them to other subassemblies. He used similar drawings when making the landing gear and other built-up components.

Mark says, "The canopy slides as on the actual aircraft to expose the cockpit interior. With the exception of extensively modified and detailed Waldron



All engine parts and the engine compartment, as well as the rest of the model, are weathered with pastel chalks and watercolors. Note the corroded metal effect on the exhausts.



Mark carved the snail-shaped supercharger from a single block of plastic, painted it a metallic color, then attached it to the right side of the engine block.



Each assembly step was carefully planned so that no parts obstructed the placement of others. This view shows the forward section of the fuselage during construction.



To ensure scale thickness the supercharger intake was vacuum-formed from thin sheet plastic.



The vertical stabilizer door opens or can be kept closed by two rotating locks. The tail wheel is steerable.



The flush rivet heads on the cowl and elsewhere were made by rotating the tips of dulled No. 20 and No. 24 hypodermic

needles against the plastic. The camouflage paints were hand-blended mixtures of red, blue, and yellow.

rudder pedals, all components in this area are scratchbuilt. The Waldron pedals were cut in half, shaped to the correct sections, and put back together. The reworked pedals are mounted on movable brass frames with toe brake cylinders and mechanical linkages.

"The windshield features 'glass and frame' construction. The sliding canopy is made of three sets of vacuum-formed parts—the inner frames, the clear

glazing, and the outer frames. The canopy handwheel and external drive screw turn via rack-and-pinion gears as the canopy is moved. The combined armor plate and headrest is attached to the canopy by operating pivots to compensate for the narrowing width of canopy track as the canopy moves aft. The slack in the antenna wire is taken up by a simple pulley system. All operating parts function as on the actual air-

craft. The radio compartment door on the canopy deck is hinged and has two latches.

"The rudder pedals (push one in and the other moves out), the control stick, and throttle are movable since I have yet to determine control surface positions for final display. Instrument dials are hand painted with artificial horizon built in.

"The wing gun doors are hinged to



Wing-root doors open to reveal the MG 151 cannons. The landing gear position indicator vane (the red rod at upper right) actually works, as does the flap position indicator (inside the circular opening, lower right), which reads from 0 to 60 degrees, depending on the placement of the flaps.



The footstep is retractable, the door opens to reveal the water and methanol tank and other internal details, and the spring-loaded kickplate in the handhold folds inward. Here it is being manipulated with a dental probe.



The main wheels and tires are from the Revell kit but have been extensively detailed. The struts and wheel hubs were turned on a lathe and the covers were made by laminating sheet plastic.

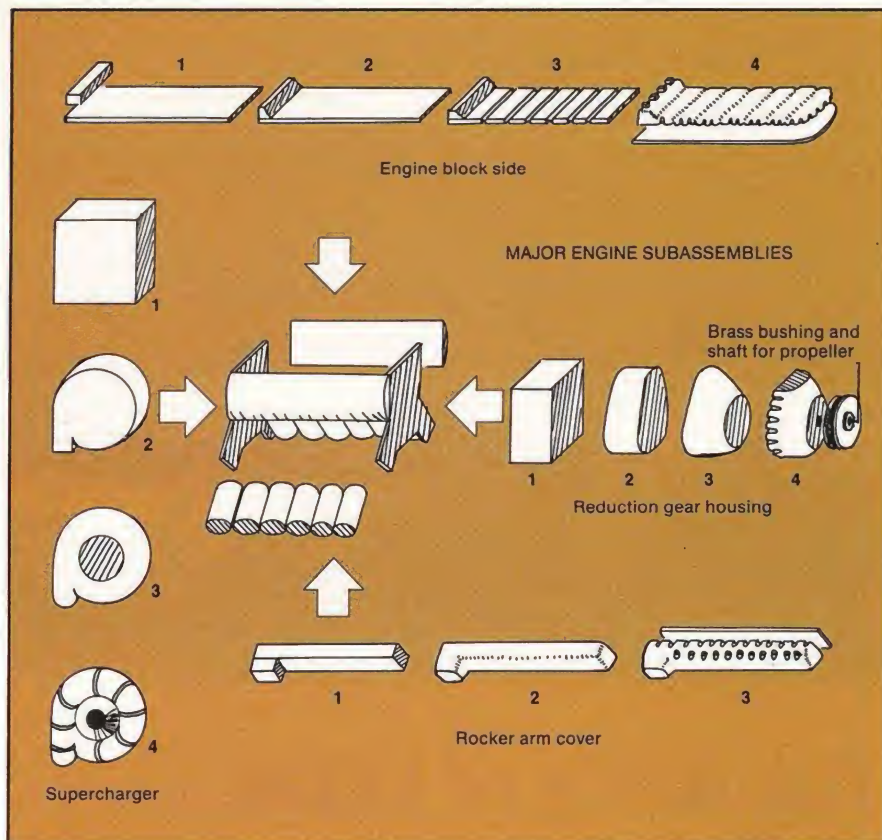
expose MG 151 cannons and cannon bays. The doors were vacuum-formed and have six latches each. The barrels are turned brass; other turned parts are plastic.

"The fuselage door is hinged to expose the water and methanol tank, ribs, stringers, and interior details.

"The footstep is retractable and the kickplate in the handhold is spring-loaded with an HO freight truck spring. The antennas were scratchbuilt from wire, stretched sprue, and sheet plastic. The DF loop is .0025" sheet plastic, as are the raised strips on the side of the fuselage and the wing fillet. The first aid door (right side) is removable.

"The vertical stabilizer door is hinged to expose completely scratchbuilt interior details. The door is held closed by two functional rotating locks. The strut, wheel, tire, and other parts are turned. The tail wheel is steerable."

Mark used similar techniques to make the main landing gear struts,



hubs, shafts, and air jacks. "The landing gear covers were built in three portions with separate wheel covers, strut covers, and indicator vanes," he explains. "Each cover was constructed with multiple laminations for correct appearance and was attached as on the actual aircraft.

"In addition, the radio compartment door on the fuselage opens to expose interior details and both fuel filler doors open. The scratchbuilt flaps include hand-painted visual indicators and 0 to 60 degree readings are visible through holes in the tops of the wings as the flaps are moved.

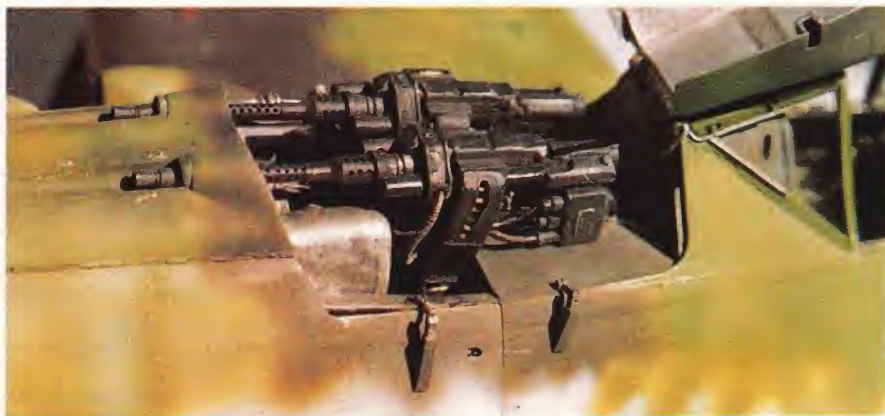
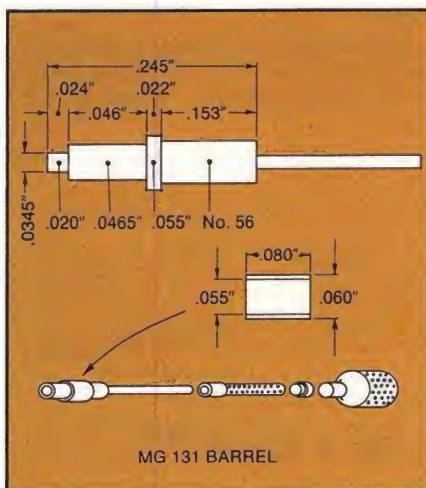
"The 300-liter belly tank and ETC

501 rack are modified parts from the Hasegawa kit. The ETC carrier is scratchbuilt. The basic shape of the late-style tank was made by cutting a 15 degree wedge out of the kit tank and building up the shallow side with Duratite putty.

"The propeller and spinner are reworked parts from the Revell kit."

The result of Mark's painstaking efforts is a model that confirms the worth of both Waki rules — much of the model's appeal stems from the to-scale details. Of course, adding those details wasn't easy — Mark estimates that the model took 2,500 hours to build. It was time well spent!

FSM



Each round for the 13 mm MG 131 cannons was turned from brass rod and then placed into the feeds. The barrels and perforated barrel covers are also brass.

Dave's 1/72 scale Hasegawa A-10A uses two red flashing LEDs for the anti-collision beacons, red and green wing tip navigation lights, and fiber optics for the position lights in the tail.



FINESCALE MODELER: Paul Boyer

The ABCs of LEDs

Adding interest and animation to your models with working lights

BY DAVID REED

ELECTRONICS HAVE CHANGED many things in our lives, and computers, digital watches, and pocket calculators are now so widespread that we have almost become dependent on them. Electronics can also add that visual spark to our models that, until now, has been absent—light. Miniature,

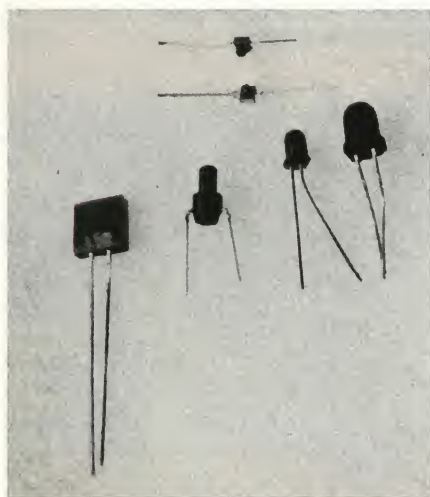


Fig. 1. Shown actual size, LEDs come in many different shapes and sizes.

controlled lights not only add a visual interest, they can almost suggest motion, bringing much-needed life to otherwise static models.

Light emitting diodes (LEDs) have made it possible to install working lights in plastic models without the risk of heat damage or burned out bulbs. LEDs can be used for navigation lights and cockpit displays in aircraft models, and exterior or interior lights in armor, car, and truck models. The applications of LEDs are limited only by your imagination, but many modelers have avoided using them because they don't know how. Actually, LEDs are simple to understand and installing them requires only the most basic understanding of electronics.

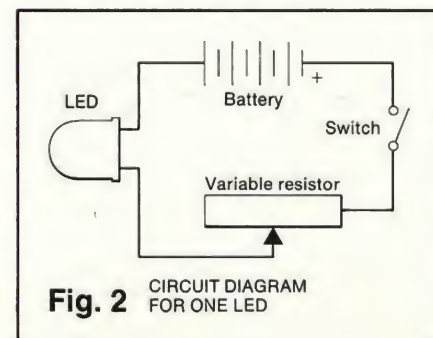
Without getting too technical, an LED works when electrical energy is converted to light by making a semiconductor glow. The LED is a "cold" light source, giving off light in a narrow, visible wavelength band. This differs from an incandescent bulb which gives off energy in a wide band of wavelengths, including infrared—invisible, but felt as heat.

LEDs consume little electricity, allowing long display times on a small power source. A small LED, run by a single "C" cell, may glow constantly for

six to eight months before the battery wears out. You don't need to worry about the power source draining during an all-day display or contest. The only drawback to LEDs is that they aren't available in clear or white. Red, yellow, and green are commonly available. The colors can be changed slightly with acrylic glass stains. Fortunately, most modeling applications of LEDs call for red.

Plan ahead. I recommend spending a lot of time planning your project. Explore the various ways you can use LEDs, how to get the wires through the model, and whether you want to install the power source inside the model or in a base. Start with a simple project and work up to harder ones. Starting with a 1/32 scale F-14 (with its myriad of lights and flashers) will result in a high level of frustration! You might think it's harder to work in 1/72 scale than in 1/32, but the principles are the same.

LEDs come in a variety of shapes and sizes, Fig. 1, and can be altered slightly to fit nearly any kit. When an LED



cannot be used, it may be possible to use fiber optic strands run from an LED source. However, fiber optics are a compromise; they project light at a narrow angle, restricting their visibility.

Simple electronics. Electricity is a new topic for most modelers, and requires that you learn a few new techniques — all of them easy. Before you start wiring, read the box on page 25 and practice soldering on some spare wire. It's a good idea to get a set of "jumper" wires to test all connections before soldering.

Figure 2 is a basic circuit diagram for a single LED. It consists of an LED, a power source, a switch, and a resistor of either fixed or variable value. I prefer variable resistors (also called potentiometers) over fixed-value resistors because they allow me to adjust the intensity of each LED. In theory, any two LED/resistor sets with the same rating should glow with the same intensity, but it seldom works that way. If you use a fixed-value resistor, changing it after installation is difficult and re-soldering could damage the model.

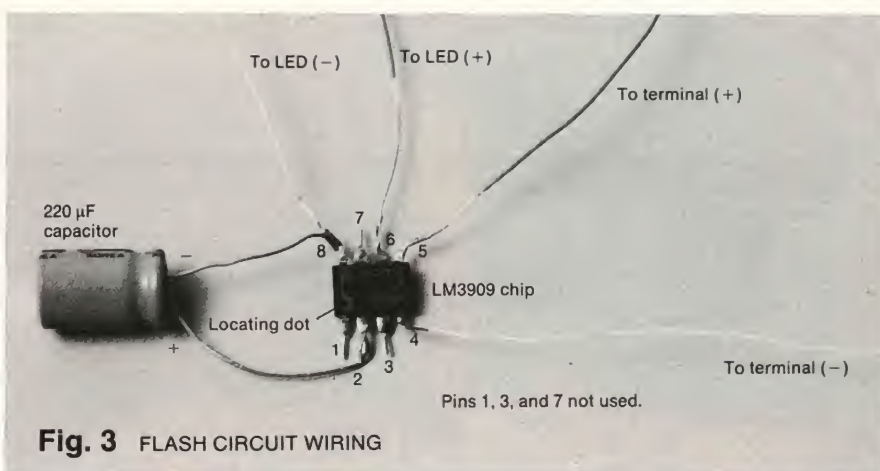
The LED is connected to both the center and either left or right leads on the variable resistor. Moving the dial varies the intensity of the LED, so if you wire the LED to the center and right leads, the LED will glow brighter as the dial is turned to the right; center and left leads, brighter to the left. The resistor can be hooked up to either positive (+, anode) or negative (—, cathode) leads of the LED. If the battery is hooked up backwards it will not damage the LED, it just won't light!

Test the circuit. I use a small loop of copper wire as a terminal junction, and solder all the leads from the LEDs and power source to that. Monitor the brightness of each LED as more are added to the circuit and adjust the value if you are using variable resistors. I use a 3-volt setup and have used as many as nine small and medium LEDs and two flasher circuits all installed in parallel with no problems.

I use wire-wrapping wire for almost all my connections. It is flexible, small, and strong. I try to use one color throughout for the positive side and one for the negative side.

Check each LED circuit six or seven times before the model is finished. You can never tell when a cold solder joint or poor connection will mess you up. The last thing you want is a lighting circuit that doesn't work after the model is assembled!

Flashers. Flasher circuits use an eight-pin LM3909 "chip" and a small capacitor which builds up the energy from the battery, allowing the chip to send a burst of energy to the LED. The combination of chip and capacitor is a compact unit that fits easily into most



FINESCALE MODELER: Paul A. Erler

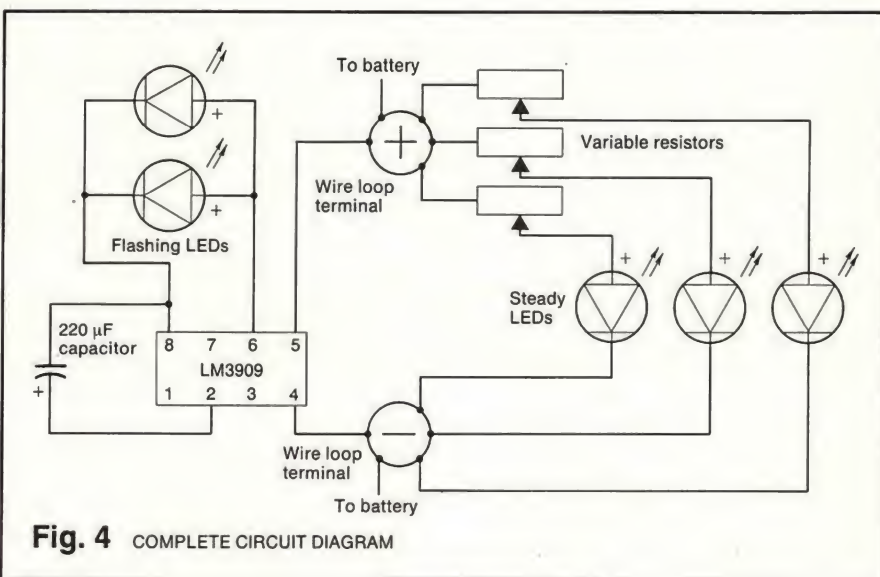
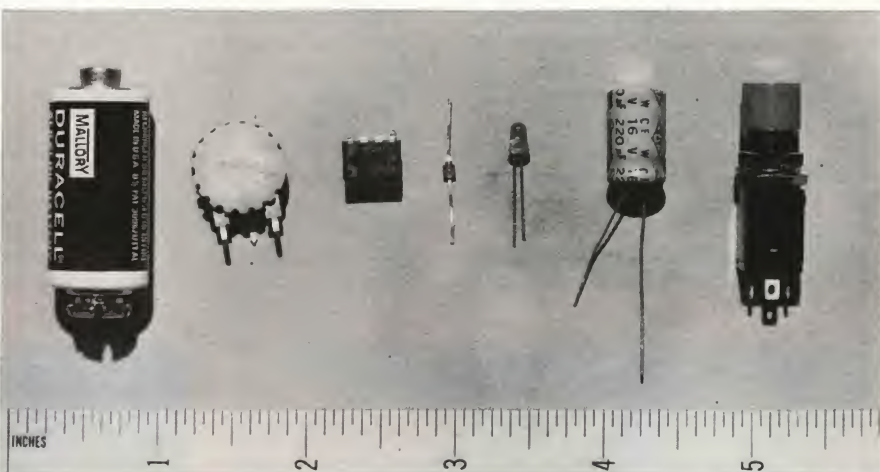


Fig. 4 COMPLETE CIRCUIT DIAGRAM



FINESCALE MODELER: Paul A. Erler

All the components used in this article are small. Left to right: Duracell PX-24 battery, 500 ohm variable resistor (potentiometer or pot), LM3909 flasher chip, two LEDs, 220 MFD (microfarad) capacitor, and a push on-off switch.

models. I have installed two LEDs, a flasher module, and a battery inside the fuselage of Heller's 1/72 scale Mirage F.1. It is tight, but it works!

I have used three small LEDs on the

same LM3909 with no problems. Figure 3 shows how to hook up the LM3909 and Fig. 4 shows how to attach it to the terminal junction. I usually wrap the entire assembly in masking

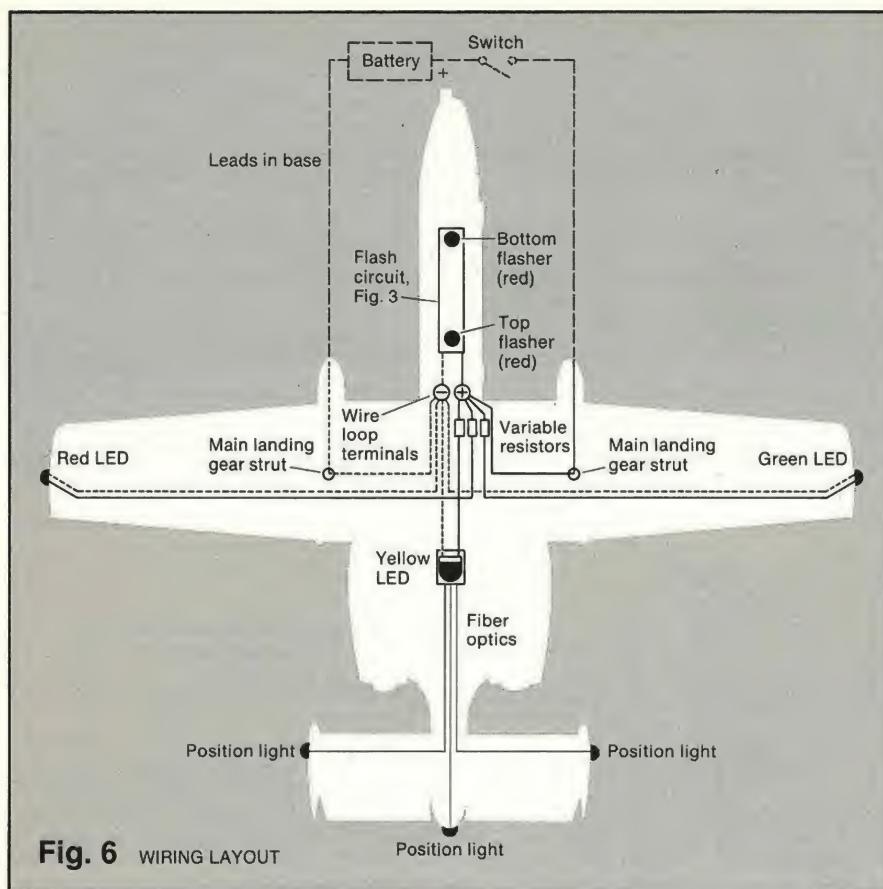


Fig. 6 WIRING LAYOUT

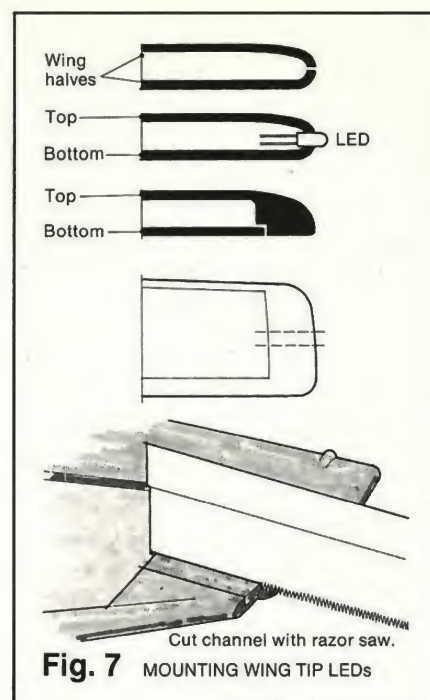


Fig. 7 MOUNTING WING TIP LEDs

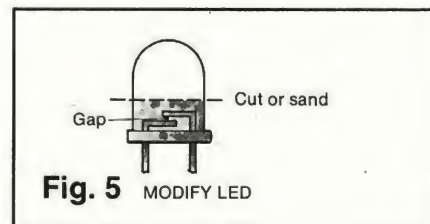


Fig. 5 MODIFY LED

tape, or coat it with epoxy, to prevent any wires or other components from shorting out. It wouldn't hurt to insulate at least one of each LED connections to prevent accidentally touching them together while assembling the model.

Do not use a regular incandescent bulb anywhere in an LED circuit. It's nothing more than a resistor that glows and it can alter the values of the other items. Sometimes it burns out or blows an LED or two; in general it's trouble. If you need an incandescent bulb in a model, run it on a separate circuit.

Modifying LEDs. LEDs can be ground down and sanded to shape, Fig. 5. As

long as you don't get near the "gap" at the base of the LED, feel free to sand away. If you get too close and damage the gap, the LED ceases to function. Protect any exposed LEDs and fiber optics with liquid masker until after painting the model.

Power supply — the battery. It's difficult (and unnecessary) to use household current (110-volt AC) to power LED lighting in models. The easiest — and cheapest — power supply is the dry-cell battery. Since the LM3909 can use three volts and the LEDs can run on any low voltage (depending on the resistance), I have always stayed in the three-volt range. If the model is to be lit up at a display for long periods of

time, two 1½-volt "C" or "D" cell batteries in series in an externally mounted tray will give you many months of continuous use. Since LEDs are low voltage items, anything over three volts without a resistor would probably be more than they can handle. LEDs have been known to explode when excess voltage has been applied to them.

My favorite battery is a 2.8-3 volt Eveready Alkaline No. 532 battery. (See source box, page 26.) It has snaps on the ends which match nine-volt-type snaps I attach to my wires to ease battery changes. I have run eight LEDs

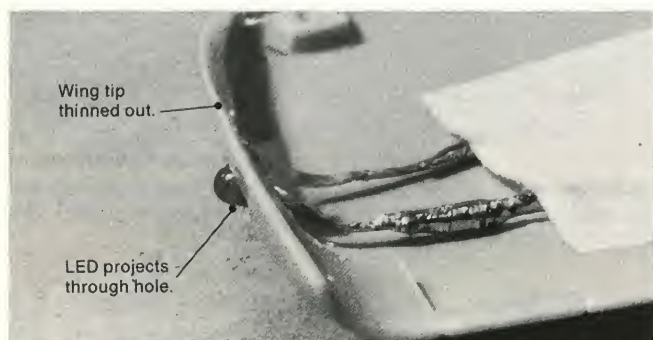


Fig. 8. Tape the wires leading to the wing tip LED to the inside of one wing half. Note that LED projects through hole in wing tip.



Fig. 9. Fiber optics for the tail position lights run through channels in horizontal stabilizers and out the tip of the fuselage. Note aluminum tube that holds the LED.

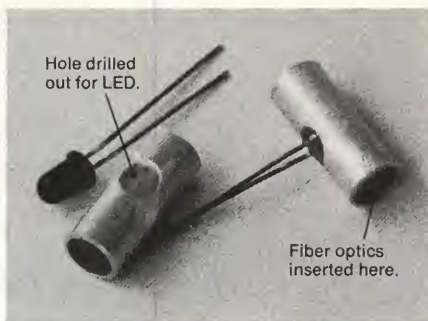
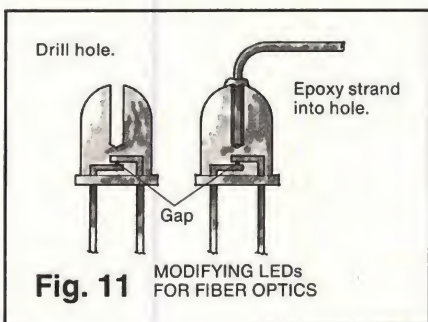


Fig. 10. The LED for the tail position lights is placed in a section of aluminum tubing. Fiber optics run from the tube out to the tail.



and a flasher on one battery for four days of at least 14 hours without any problems. This battery is small enough to fit inside most aircraft model fuselages and tank chassis regardless of scale. Of course, you'll have to make provisions to get it out to change it.

I have also used rechargeable nicad (nickel-cadmium) batteries and installed attachment points for the two-pin charging plug. This is convenient, but if the battery ever leaks, I'll have to kiss the model good-bye. All in all, I recommend replaceable batteries.

Internal switches can be concealed so that they don't detract from the model. A rotary switch can be installed in the front of an engine cowling. Turning the prop turns on the switch. I attached a slide switch to the MAD boom of an S-3A Viking; pulling out the boom turns on the lights!

Installation. For this article, I installed LEDs and fiber optics in Hasegawa's 1/72 scale A-10A. This aircraft has wing tip lights and flashing anti-collision beacons on the top and bottom of the fuselage. The A-10 also has small, white position lights on the outer vertical tail surfaces and the aft tip of the fuselage.

Figure 6 is a diagram of the A-10 model showing the location of the lights. The two anti-collision beacons are run off of one LM3909 chip and one 220 MFD capacitor. The wing tip LEDs and the position light LED with its fiber optic leads each have their own potentiometer to adjust their brightness. The battery and switch are installed in

BASIC SOLDERING TECHNIQUES

Since most models don't require soldering, a quick course is in order.

A low-wattage (15, 20, or 25 watts is the right size) soldering iron with a fine tip is the first item to buy, and a holder for the hot iron is definitely worth having. Since electronic components like LEDs and chips are susceptible to heat damage, heat sinks — small aluminum clips that absorb heat — are necessary.

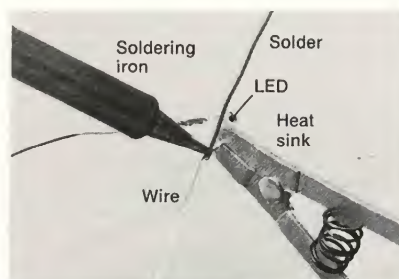
The soldering iron heats the parts to be soldered and melts the solder — usually, an alloy of tin and lead — to make a strong, electrically conductive bond between them. Fine rosin-core solder can be purchased at any electronics supply house, as can virtually all other supplies discussed here. Don't get acid-core; as the name implies, it can be disastrous to models. The "core" refers to the flux that is inside the solder strand. The flux cleans the metal surfaces, removing residues that would prevent the solder from adhering properly. You can't solder without flux.

A pair of adjustable wire strippers is another handy item. Be careful that the strippers do not nick the wire; doing so risks breaking the wire later during handling.

Before you plug in your soldering iron, make sure the tip is screwed on tightly. Let the iron warm up for a few minutes before using it. While the iron is warming up, moisten a sponge or folded paper towel. This will be used to clean excess solder and flux from the tip of the iron. Wipe the tip on the towel, making sure the tip is shiny and clean.

The most common joint you'll have to make is two or more wires twisted together and then soldered, preventing the wires from coming apart and ensuring a continuous electrical path. When space is tight, I use a simple lap joint of two straight wires soldered together to make a streamlined connection.

To test whether the iron is hot enough, touch the solder to the tip of the iron; it should melt immediately. Place a heat sink between the connection to be soldered and any electronic component. (LEDs, chips, and capacitors are



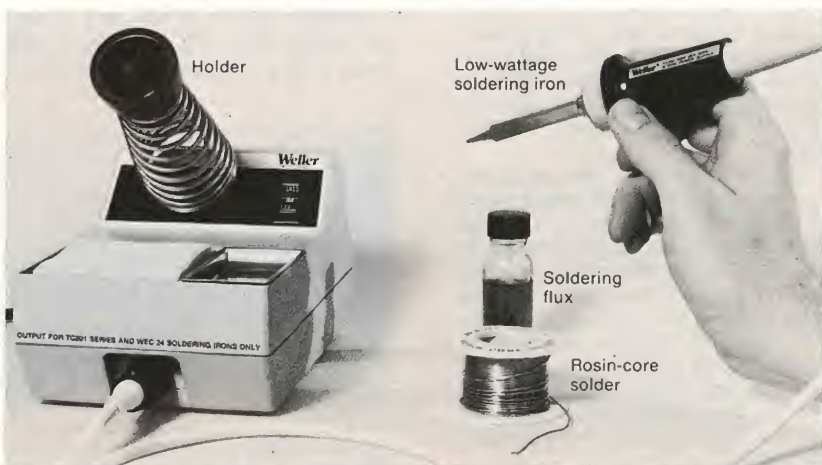
FINESCALE MODELER: Paul A. Erler

especially heat sensitive.) Touch the iron to the wires for one or two seconds, then touch the solder to the point where the iron and wires meet. The solder should melt quickly and flow into the joint. Remove the solder and iron quickly, then blow gently on the joint. Work quickly; it only takes a second for the solder to flow when you are working with delicate parts!

Once you are comfortable with this routine, you can go quickly from joint to joint. Always take the time to recheck your hookups and make sure everything is working properly — no "cold" solder joints (poor connection) or damaged parts. This way you maintain quality control as you go; if something stops working you know where the problem occurred.

A "third hand" work holder is a helpful accessory. Radio Shack's heat sink set (No. 276-001) includes one clip attached to a magnetic stand. Other third hand tools are available from electronics stores.

A few words of wisdom: Don't wear good clothes while soldering; solder sometimes "spits" or drips off the iron (too much solder!). Work on glass or any other fireproof surface. When you're through working, remember to unplug the iron and set it aside in a safe place where you can't accidentally burn yourself or knock it onto the floor. I have mine on a switched outlet box and flick it off every time I'm finished. I would rather wait a minute for it to reheat than risk ruining the tip or the element by accidentally leaving it on overnight.



FINESCALE MODELER: Paul A. Erler

SOURCES:

Below is a listing of Radio Shack stock numbers for the items used in this project. Similar items are available from other sources.

- LEDs 276-041, 021, 022, 026, 031, 037, 070, 071, 072, 074.
- Flasher chip LM3909, 276-1705.
- 220 MFD capacitor, 272-956.
- Printed circuit potentiometer, 500 ohms, 271-226.
- Jumper wires, 278-1156.
- Heat sinks, 276-001.
- Wire-wrapping wire, 278-501, 502, 503, 504.
- Switches, 275-406, 275-1555.
- Solder, 64-005.
- Low-wattage soldering gun, 64-2065, 2070, 2071, 2067.
- Soldering iron holder, 64-2078.
- Battery, Eveready Alkaline No. 532, Mallory Duracell PX-24.

LEDs are also available from Circuitron, P. O. Box 322, Riverside, IL 60546.

Fiber optics are available in many craft stores. LEDs and fiber optics are available from the following mail-order companies. For catalogs, write: American Science Center, 5700 Northwest Highway, Chicago, IL 60646.

Edmund Scientific, 101 East Gloucester Pike, Barrington, NJ 08007.
William K. Walther, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.



Meet David Reed

Dave Reed attended Alfred University and is the owner of a hobby distribution business. He and his wife Barbara are regular vendors at regional and national IPMS conventions.

Dave's interest in the modeling hobby started when he was 8 years old, helping his brother on a model railroad. His interest broadened to building figures and military models during college. Dave's aircraft and figures have won numerous awards in invitational, regional, and national competitions, including several best in show and judge's choice awards. He has also served as the president of the Buffalo (New York) Military Modelers.

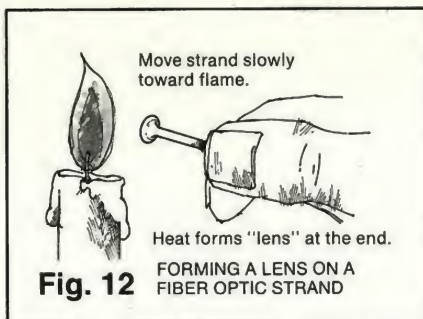


Fig. 12

a wooden base, and the wires leading to them run through the wings and down the main landing gear struts, simulating brake hydraulic lines. The wires then run through a channel cut in the wheels and into the base.

Figure 7 shows two methods for installing wing tip lights. By grinding away the plastic from the inside, the LED can be made to project through a hole drilled in the wing tip. LEDs can shine brightly, so it is a good idea to paint the inside of the model near the LED black so the light won't show through the plastic.

After the wires are soldered to the LED, tape the wires to one half of the wing, Fig. 8. Drill a hole or channel through the mating surfaces of the wings and fuselage. The resistors for the wing tip lights and the terminal loops are stored in the fuselage.

An additional yellow LED (that's as close to white as you can get) is also installed in the fuselage. This LED lights fiber optic strands that run out to the three position lights in the tail, Fig. 9. I placed the LED through a hole in an aluminum tube to concentrate its light toward the fiber optic strands, Fig. 10. You can drill a small depression into some of the larger LEDs and run the fiber optics right into them, Fig. 11. Again, avoid damaging the gap in the LED.

I cut channels into the bottom of the horizontal stabilizer out to the vertical stabilizers. Next, I used a candle flame to produce lenses at the end of each fiber optic, Fig. 12, and then drilled holes in the vertical stabilizers and the



Fig. 14. Flashing red LED is placed in the upper fuselage. Wires lead to the LM3909 chip stored in the fuselage.

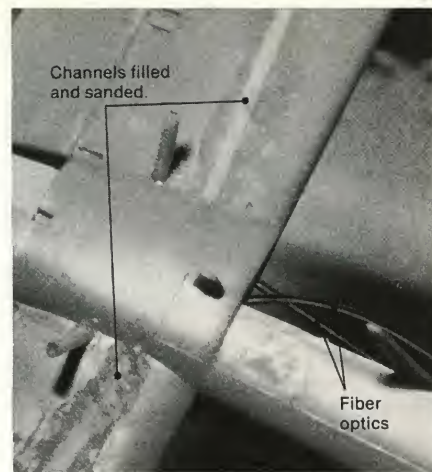


Fig. 13. After the fiber optics have been positioned in the horizontal stabilizer, the channels are filled and sanded.

tip of the rear fuselage. I ran the fiber optics through the holes, down the channels, into the fuselage, and into the aluminum tube housing the LED. I filled in the channels with putty and then sanded them smooth, Fig. 13.

The two flashing anti-collision beacons were placed in holes cut in the fuselage, Fig. 14. The chip and capacitor are stored inside the fuselage with wires leading to the terminals.

Power leads. If you decide to store the battery inside the model, you will need to devise a way to remove it when it wears out. Some engine nacelles have room for the 3-volt battery and a removable panel can do the trick. If you want to have the battery outside the model, you'll have to route the power leads to the circuitry.

Before joining the wing halves, I drilled two holes into the lower wing half next to each landing gear mount and ran a wire up each into the wing. The ends of the wires were soldered

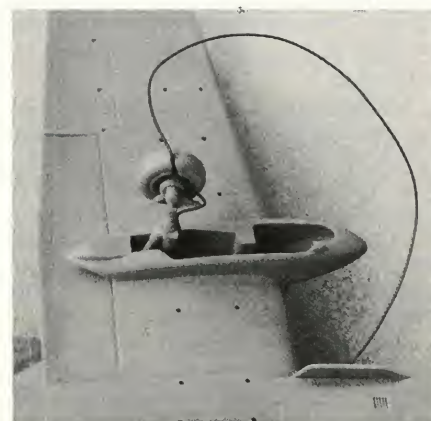


Fig. 15. Power leads run next to the main landing gear struts and into the wheels. Note the cut for the wire in the solid wheel. When painted the wire simulates the hydraulic brake line to the wheel.



onto the terminal loops inside the fuselage. The other ends of the wires lead to the battery and switch in the base.

I ran the wire down each main gear strut and through a groove cut in each main wheel, Fig. 15, using super glue to attach the wires to the struts. Figure 16 shows two methods of getting the wire out through the wheel and into the base. When painted, the wires look like the hydraulic lines to the wheel brakes. The wire continues through the wheel and into a groove cut into the bottom of the base, then to a hollow for the battery and switch.

Before completely assembling the model, I hooked up the battery and made sure all the lights were working. Then I carefully tucked the excess wire into the fuselage and cemented the fuselage halves together. That's all there is to it. Of course it always helps to paint and decal your model before attaching it to the base.

Light up those instrument panels. LEDs and fiber optics can be used to detail the inside of the model, too. An LED can be adapted to simulate a radar screen or CRT (cathode-ray tube) display. Cut a hole in the kit's instrument panel and install a ground-down green LED, Fig. 17. Warning lights and markers can be drilled out through the consoles and panels and fiber optics inserted leading to a common LED. You don't have to duplicate all the warning lights; six or seven in a 1/48 scale cockpit will really set things off.

FSM

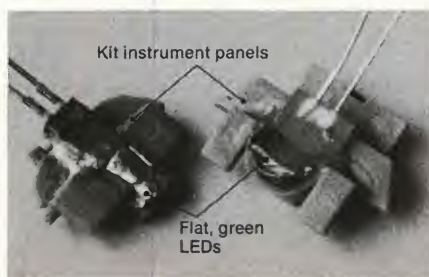
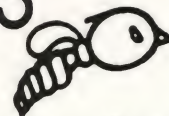


Fig. 17. LEDs can be used to simulate radar screens in model aircraft cockpits. Shown here from the back, LEDs project through holes cut in kit instrument panels.

COMBAT MODELS



Vol. 4 No. 2

SEND FOR NEW
SCRATCH & VAC MAGAZINE

\$3.75

"The only magazine for scratch and vacuform builders"

For a complete listing of over 100 vacuform aircraft, ships, softskin, metal accessories, figures, and complete line of our custom decals send 50 cents to:

COMBAT MODELS, 1633 Marconi Road, Wall, New Jersey 07719

METALIZER™

THE ULTIMATE IN MODEL METALIZING FINISHES

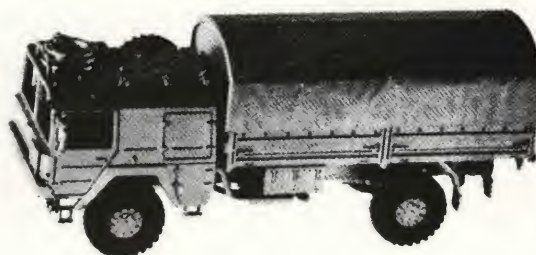
NEW IMPROVED FORMULA

A unique product for unique models. From the people who invented the worlds first plastic model metalizing finish. No other metalizing finish offers you the versatility of Metalizer. For all types of aircraft, car, ship, train, armour and science fiction models. Airbrush on and buff to a brilliant sheen in minutes. Metalizer is a tough and durable waterproof finish. With 13 metal shades, sealer and 2 dayglo colors to choose from.

1. ALUMINUM PLATE
2. STEEL
3. MAGNESIUM
4. TITANIUM
5. GUN METAL
6. EXHAUST
9. SEALER
10. DAYGLO-RED
11. DAYGLO-ORANGE
12. DARK ANODONIC GREY
13. METALLIC BLUE
14. GOLD
15. BURNED METAL
16. *COPPER
17. *BRASS
18. *ALUMINUM-NON BUFFING
19. *THINNER
101. *ALUMINUM PLATE IN AEROSOL CANS
*NEW FOR 1983

METALIZER PRODUCTS
1019 BONITA ST.
TUSTIN, CA 92680

SEND STAMPED & SELF-ADDRESSED ENVELOPE FOR METALIZER BROCHURE
Dealer Inquiries Invited



A. Kempees

"The Unofficial Importer"
All 1:87 Perfect HO scale

ROCO Minitanks are an extensive assortment of HO scale military miniatures suitable for use in dioramas.

They are molded in polystyrene plastic and feature many of the details of the much larger scales.

Choose from a selection of over 200 military vehicles!

A. Kempees

SEND \$1.00 FOR A
COMPLETE CATALOG
AND PRICE LIST

A. Kempees
Hensyn Village Q-4A
Budd Lake, NJ 07828

A. Kempees

Modeling "Murat in Egypt"

Bedecked in sash, gold braid, and feather plumes, Murat was the gaudiest of Napoleon's cavalry leaders — and perhaps the best of them as well.



Color photos by Lane Stewart

A 1/32 scale mounted figure conversion based on Historex parts — and a toy horse!

BY JOE BERTON

EVERY student of the Napoleonic period quickly learns of Joachim Murat, probably the finest and certainly the most dashing of Napoleon's cavalry leaders. A former seminary student and the son of an innkeeper, Murat was notorious for his exploits both on and off the battlefield. Napoleon described him as "a paladin, perhaps the bravest man in the world, but left to himself he was an imbecile."

Murat led his first famous cavalry charge in Egypt, at the Battle of the Pyramids in 1798. He was to serve Napoleon at Jena, Austerlitz, Eylau, and Borodino, and was eventually made King of Naples; he even married one of Napoleon's sisters.

Murat's vanity led him to concoct some of the gaudiest uniforms ever worn, replete with feathers, lace, and animal skins. A real ladies' man, after being wounded in the face Murat wrote to his father, instructing him "to tell all the young ladies that even if Murat has lost some of his good looks, they won't find that he has lost any of his bravery in the war of love."

A painting — and a toy horse. Being a fan of Murat and interested in all things Egyptian, I set out to make a mounted figure in 1/32 scale showing Murat during the Egyptian campaign, where he established his reputation as a brilliant cavalry leader. The best reference for such a piece is an 1806 painting by Jean-Antoine Gros, *Murat Defeating the Egyptian Army in the Battle of Aboukir, July 25, 1799*. On display at Versailles, the painting, Fig. 1, shows all uniform and horse details clearly.

To build a mounted figure in this

scale most modelers start with a Historex horse. These come as separate body halves, heads, and tails that can be cut up and assembled in almost countless ways. Unfortunately, I've seen too many Historex horses — show me a mounted Historex figure and I can tell you the stock numbers of the spare parts used to make it. For Murat I wanted something different, and I considered using the horse from an Airfix mounted figure kit. It's a good one, but the kits are scarce, so I had to look elsewhere.

I finally elected to use a Breyer* horse. Young girls have been collecting these inexpensive miniature horses for years. Molded in soft, resilient plastic and airbrushed in Hong Kong, they are sold in hobby shops and discount toy stores across the country, Fig. 2. Several varieties, from Arabians to draft horses, are available in different scales, including one perfect for 1/32 scale. I selected Breyer's No. 5016 Arabian Stallion as the basis for Murat's mount.

There are drawbacks to using Breyer horses, but they are easily overcome. Some of the details are not crisp; for example, the fetlock, which should be well defined, blends softly into the hoof. To sharpen up the detail on the fetlocks, I used Testor's Body Putty, thinned with Testor's Liquid Cement and applied with a brush, Fig. 3.

The Breyer horse I used had molding lines which I removed using a modeling knife with a new No. 11 blade. The soft plastic is easy to cut, but because it is resilient only a sharp blade will do.

*Breyer Molding Company, Chicago, Illinois, 60612.



Fig. 1. This detail of Murat from an 1806 painting by Jean-Antoine Gros served as Joe's reference for building and painting his 1/32 scale conversion.



Fig. 2. Breyer "Stablemates" miniature horses are usually found in toy stores. They come in different poses, breeds, and scales, and author Berton has found that one of the sizes is perfect for 1/32 scale.

Even a blade that is only slightly dull will cause "fuzzy" cuts, making the plastic difficult to work with.

Like the fetlocks, the mane, forelock, and tail lacked definition and detail. I chopped off the tail, replacing it with a Historex part that I had textured with

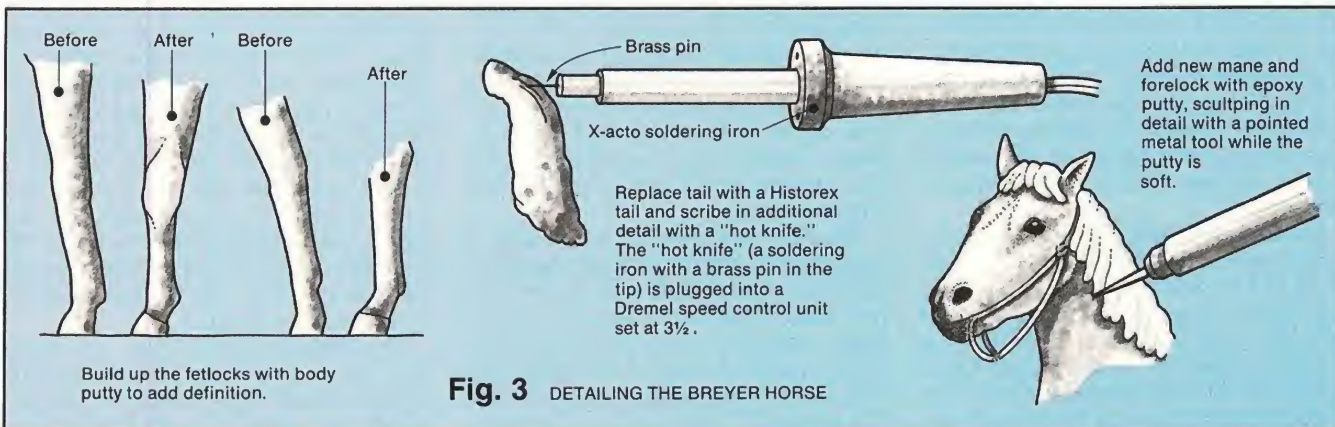


Fig. 3 DETAILING THE BREYER HORSE

All parts except torso are Historex spare parts available from Santos Miniatures, P. O. Box 4062, Harrisburg, PA 17111.



Fig. 4 PARTS FOR THE FIGURE

my homegrown version of a "hot knife," an X-acto soldering iron with a brass pin inserted in place of the soldering tip, Fig. 3. I removed the mane and forelock and used A + B Epoxy Putty to build up new ones. (If you don't already know about it, epoxy putty is a plumbing-repair material that is rapidly gaining in popularity as a modeling medium. It's great for scratch-building figure parts, and if you have trouble using it, you can always fix leaky pipes with it instead.)

Completing the horse. The Gros painting of Murat shows his horse with a leopard skin shabrack, a saddlecloth that was fitted over the saddle. Historex part No. 11, a panther skin, is similar, so I removed its tooth-edged trim and fitted it to the horse. I moved the leopard head further back toward the tail, removed the original platform for the head, and used Testor's Body Putty to fill gaps. After the putty dried I sanded the filled areas smooth and coated them with "liquid sprue solution," a homemade concoction of plastic bits dissolved in liquid cement until the goop has the consistency of Elmer's glue. When the liquid sprue had dried I textured the shabrack with a hot knife.

Next I sprayed the horse with Floquil figure primer. Besides providing a good base for later painting, the coat of primer reveals defects so they can be corrected.

Modeling Murat. Historex makes a great portrait head of Murat (part No. 211), so I used it as a starting point for the figure. Figure 4 shows the other Historex and Airfix parts. The body is part No. 2 from the Airfix British Eight Army set, with all detail removed. The right hand is a severed Historex drum-



Fig. 5. The assembled Murat figure, before the gaps had been filled and the coattails and cocked hat added. The hands are also missing in this view, which shows the Historex shabrack after modification.

mer's hand, the left is simply a flat, outstretched Historex hand that I had in my spares box.

This brings up an interesting point about figure conversions: Don't be afraid to cut the available plastic parts into pieces and combine them into new attitudes and poses. Doing this will put more variety into your models and help you to move away from the "stock part" look typical of so many conversions.

After assembling the parts to make the basic figure armature I filled the gaps with Testor's Body Putty, Fig. 5. Making the long coattails for the general's uniform presented a problem until I thought of cutting them from Kleenex tissue, dampening the tissue with Elmer's glue, and placing them in position. After brushing on more glue the coattails were allowed to dry, then I trimmed the edges with a sharp No. 11 blade and added folds with body putty. When the putty had dried I coated the coattails with liquid sprue solution.

The fancy gold embroidery down the front of the coat was also made with body putty, Fig. 6. The raised putty areas are greatly simplified, since you can drive yourself crazy trying to model such detail exactly. Instead, I prefer to almost fake the three-dimensional aspect of the embroidery and paint on most of detail over the built-up area. The buttons are slices of plastic rod, glued in place.

The sash and epaulets were made of epoxy putty, Fig. 6. To make epaulets, start with a little ball of it, and work it into shape right on the figure. Trim the edges with your modeling knife, then lightly push the edge of the blade into the epaulet diagonally across the entire surface. Finally, go over the same



Figs. 8 and 9. The completed figure before painting. The parts made from epoxy putty are gray-green; lighter areas are plastic, paper, or filler putty coated with the author's "liquid sprue" solution.

area with the blade held vertical to make the fringe. This crisscrossing makes a perfect texture for the epaulet.

A cocked hat, feathers, and hair. Murat's large bicorne was cut from white envelope paper. I finally got a workable pattern after several attempts, Fig. 7. A hole was cut in the center of a small paper square and enlarged until it was a tight fit on the figure's head. Around the hole I sketched the pattern of the bicorne and cut it out with scissors. I dampened the flat, cut-out hat pattern with water and glued it to the figure, then brushed Elmer's glue over the paper and shaped it into the finished hat, tilting it at the rakish angle I wanted, Figs. 8 and 9.

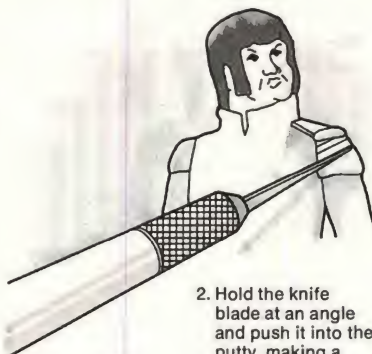
The feathers for the hat were made from epoxy putty, Fig. 7. Start by flattening a small ball of putty on your fingertip, then trim it into the feather out-

To make the fancy leaf-pattern gold embroidery around the collar and down the front of the coat, apply thinned body putty with a paintbrush in a simplified pattern.



EPAULETS

1. Place a ball of epoxy putty on the shoulder and work it to shape, then trim.



2. Hold the knife blade at an angle and push it into the putty, making a series of parallel marks.

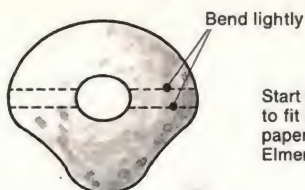


3. Hold the blade vertically and add the fringe to the epaulet.

Fig. 6 ADDING EMBROIDERY AND EPAULETS

line and texture the surface with your modeling knife. When one side is done, remove the feather from your finger, texture the other side, and set it aside to harden. I bunched the individual feathers together on the hat and added more texture with a coat of liquid sprue solution and a few touches with my hot knife. Murat's long hair and sideburns are textured putty.

The horse bits and stirrups are stock Historex parts (set No. 91), as is Murat's



Pattern is not full size

Bend lightly

Start by making the basic bicorne hat from paper. Cut a hole to fit the head, then shape the edges as shown. Dampen the paper and work it into final shape on the figure, then coat with Elmer's glue.



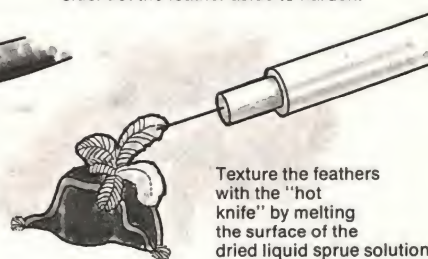
To make feathers, place a roll of epoxy putty on your fingertip and texture it with a knife blade.



Pry the feather from your finger and carefully repeat the detail on the second side. Set the feather aside to harden.



Glue the feathers to the hat, then coat them with "liquid sprue" solution.



Texture the feathers with the "hot knife" by melting the surface of the dried liquid sprue solution.

mameluke scimitar (No. 213). The reins, stirrup straps, and gauntlet cuffs were made of envelope paper coated with glue. Incidentally, the sword has an interesting history. Murat took it from the mameluke leader Murad Bey. Later, the Duke of Wellington captured it in Spain and presented it to the king of England; years later, the crown presented it to the king of Egypt. The scimitar is now on display at the Islamic Museum in Cairo.

Painting a scale leopard skin. After completing the figure I sprayed horse and rider with Floquil figure primer. Both were then base coated in appropriate colors (blue under the blue coat, white under the trousers, and so on) using Plaka* water-base paints. I applied artist's oils over the undercoat colors, using Winsor & Newton throughout except for metallic colors, where I used Testor's.

Although there isn't room here for a complete, blow-by-blow description of how I painted the figure, painting a leopard skin isn't something you (or I) do every day, so I'll touch on it briefly. In painting anything, good references — especially photos or paintings — on the item to be painted are half the battle, and the leopard skin was no ex-

ception. An excellent reference for painting cats is an inexpensive book, one of the Walter Foster series of "how to draw" books often found on the back wall of art supply stores. Titled *The Cats In Action* by Walter J. Wilwerding, the book breaks down the pattern of spots found on leopards, and explains how the spots vary on different parts of the coat. For example, down the back of the animal there are hollow oval shapes which gradually change into solid spots as they near the white edges of the skin. My copy cost only \$2.50, and it's a useful reference for painting any cat skin.

I mounted the completed piece on a small walnut base. The groundwork is Celluclay, covered with Elmer's glue and coated with finely textured sand I picked up during a visit to Aboukir, the site of Murat's great victory in Egypt. With that, the project was finished.

Murat was an interesting character to the very end. Legend has it that when he faced the firing squad that ended his life in 1815, he paid the executioners a large sum not to aim at his face.

FSM

REFERENCES

- Herold, J. Christopher, *Bonaparte in Egypt*, Harper & Row, New York, 1962.
- Moorehead, Alan, *The Blue Nile*, Harper & Row, New York, 1962.

*Kohinoor Rapidograph, 100 North Street, Blumsbury, NJ 08804.

Introducing FSM Clinic

Got a modeling problem? FSM Clinic is here to help. FSM's staff will try to answer any modeling question and solve any modeling problem you have. FSM Clinic, however, is not a reference service for markings, unit histories, and other non-modeling, research questions. Send your modeling questions to FSM Clinic, FineScale Modeler, 1027 North Seventh Street, Milwaukee, WI 53233.

FINESCALE MODELER staff photos by
A. L. Schmidt and Paul A. Erler

Conducted by Paul Boyer

Vac-u-form troubles. I'm having trouble vacuum-forming canopies. The thinnest clear plastic I've been able to find is .010". I believe this is my problem, but I have been unable to find clear plastic any thinner. *Clarence Morse*

I'll assume that you are using the Mattel Vac-u-form toy produced some years ago. If you are, I don't think that the thickness of the plastic is the problem.

First, check the machine itself. Check the suction by removing the plastic stage, then put your thumb over the hole and work the pump. You should feel plenty of suction. If you don't, turn the machine over and spread a little Vaseline around the inside of the cylinder.

Next, check that the stage fits tightly. If it doesn't, shim the edges with sheet styrene. This will prevent the pump from drawing air around the stage, and create better suction through the holes.

Rotor blade droop. Help! My helicopter models suffer from lack of realistic blade droop. At rest, the main rotor blades on real choppers exhibit a distinct droop which I have been unable to induce in kit blades with hot water. How can I get them to droop?

J. F. Roche III

I have had good results inducing droop to model helicopter rotor blades by bending them; not by holding each end and bowing it, though. That will lead to instant disaster! Take each rotor blade and apply stress in many

Your heating element might be shot. Plug it in and allow it to warm up for about 10 minutes. Place a sheet of plastic in the frame and position it over the heating element. A .015" styrene sheet (the same thickness Mattel provided) should start to sag in the center in less than 30 seconds. If your plastic does not, the heating element may be damaged and you will have to find an electrical handyman to fix it.

If your machine passes all these tests, look at the plastic you're using. I have a few sheets left of the "real stuff" — Mattel's clear sheets made expressly for the machine. I have had good luck with .015" acetate, available in large rolls from art supply houses. Carefully cut sheets to the same size as the Mattel sheets (3" x 3½"). You don't have to punch holes in the sheets, just squeeze the two sections of the frame together firmly so that the teeth grip the sheet well enough to keep it from slipping out. You might want to try K&S Butyrate Clear sheets, available at hobby shops that cater to radio control.

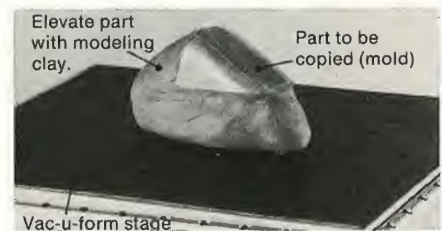
Always elevate the mold above the stage so that the plastic draws around the bottom edge. I fill the inside of the part to be copied with plain modeling clay, the five-and-dime variety. I make a "foot" for the part, wiping off any clay that gets on the top of the piece, and undercut the part slightly so that there is a clearly defined edge. Then I flatten the bottom so that it rests on the stage and does not move during forming. Always check that no sharp corners stick out to puncture the plastic.

Next, pop the piece with the clay at-

areas along its length, starting near the hub end and working outward every half inch or so. I don't bend the outer quarter of the blade.

It's possible to apply too much stress to the blade and break it, so give it just a little bend at a time in each spot; you can always go back and give it more. If you do break one, repair it with liquid glue. I have found that cyanoacrylates (super glues) don't have enough shear strength on a repair with so little surface area. After you have repaired the rotor, you'll have to avoid bending near the break.

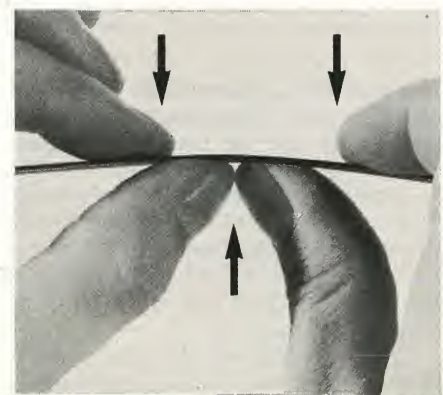
P. B.



tached into your freezer for about 10 minutes. The cold hardens the clay, preventing it from squashing as the copy is formed.

Make sure the plastic is hot enough by briefly poking it with your finger. It should yield easily to the pressure and then return to its shape within a few seconds. When it is ready, hold both parts of the frame firmly and quickly bring the heated plastic over the mold on the stage. Immediately give the pump three or four quick, full strokes. You should feel resistance in the pump and no "breathing" of air around the mold. Breathing indicates either a poor-fitting sheet in the frame or a puncture.

Paul Boyer



Scrape off that chrome. I'm having trouble getting the dual tandem wheels on my 1/25 scale Ertl and AMT truck models to stick together. I use Testor's plastic cement for assembly. Is the glue the problem?
Skip Arnold

I'm assuming that your problem is getting the outer wheel rims to stick to the inner wheel rims. First, make sure that you scrape away the chrome plating on the surfaces that are to be glued. Plastic cements cannot penetrate this plating and a bond is never achieved. Tube-type plastic cements may not be giving you a strong enough bond, so I recommend using liquid-type plastic cement. Put the inner and outer rims together and then brush on the glue, allowing it to flow in between the parts. Allow a day to pass before you put the tires on. You can also use super glue, but do so carefully, or getting attached to your hobby will take on an entirely new meaning!
P. B.

Australian decals. I can't find a source for Roodecal, an Australian company that makes decals for plastic aircraft models. Do you know where I can get them?
Anthony Partlow

The only listing I have for Roodecals is Croydon Impex, 10 Stoneyfield Road, Old Coulsdon, Surrey CR3 2HJ, England. Some English firms like Croydon will deal with overseas customers if they have a Mastercard or Visa account. You might try to contact Croydon for a complete list of Roodecals, prices, and shipping information. Apparently, there are no U. S. distributors for Roodecals at this time.
P. B.

Fiber optics. I am scratchbuilding spaceship models which I design myself and want to use fiber optic strands to light them. But, I am having trouble finding fiber optics. Do you have a source?
Elmer Jimenez

Back about ten years ago, when they were the rage, you could find inexpensive fiber optics in any craft store, but now few places handle them. Model railroaders use them on railroad layouts to simulate small lights in buildings, signals, and so forth.

Walther's HO model railroad catalog lists fiber optics in many sizes, but you may want to try the Fiber Optic Sampler II kit (No. 630-81) which contains 30" strands of .020", .030", .040", and .060", along with 12" of jacketed multifilament light guide, plus red, yellow, and green dyes. Write William K. Walther's, Inc., P. O. Box 18676, Milwaukee, WI 53218. A similar sampler kit is available from the Hobby Factory, Inc., RD 3, Box 279A, Kutztown, PA 19530.
P. B.

Masking small circles. I have a problem trying to paint the circular outline of the helicopter landing pad on the plastic ship model, U. S. S. *Halsey*. The stripe works out to be only 1.5 mm wide. Masking tape will not produce an even outline, and a fine brush in a steady hand does not appear to be the answer. What do you suggest?
Edward Sachs

You didn't mention the scale of the model but I assume it is the Monogram kit which has been out of production for a few years. The best way to mask a circle is to use frisket paper (sometimes called frisket film). This is a thin, paper-backed, self-adhesive material used by artists to mask airbrush illustrations. Look for it at good art supply stores.

I use a draftsman's compass with a cutting blade in place of the pencil. First, cut the mask for the outside of the circle. Then cut another circle that is 1.5 mm smaller in radius. Discard the inside of the larger circle and the outside of the smaller circle. Apply the frisket outline on the part to be painted, then place the smaller circle in the center, making sure that the exposed



area is of equal thickness all the way around the circle. You'll have to eyeball this but keep trying till you get it right.

Once you're satisfied that the frisket is in the proper position, burnish it down with your fingernail. Now you're ready to paint, and I would recommend airbrushing. If you're going to hand brush, do it carefully so that the wet paint doesn't creep under the frisket.
P. B.

1/48 scale Phantoms. I am trying to produce a complete collection of every version of the McDonnell Douglas F-4 Phantom II in 1/48 scale. However, missing from my collection are the DF-4B, QF-4B, RF-4B, RF-4E, F-4EJ, F-4K, F-4M, and F-4S. When will such kits be available?
P. F. Eng

I gather from your letter that you're building right from the box, but both simple and radical conversions are necessary to produce some of these versions. The DF-4B and QF-4B can be made from the Minicraft/Hasegawa F-4B kit by adding the appropriate antennas and markings. The F-4B series had the original thin wing and thin main landing gear wheels, while the F-4C and later variants had the thick wing and wheels as in the Testor/Italeri RF-4C kit. It would be difficult to accurately convert this kit to the RF-4B. The best way to produce an accurate RF-4B is to graft the nose of the Testor/Italeri RF-4C to the Minicraft/Hasegawa F-4B which has the thin wing and wheels.

Custom chroming. I'm building a kit of the Apollo command module which had a chrome finish, and I have had no luck in reproducing this finish. The spray paints that claim to look like chrome really don't. Is there a place I can send model parts to have them chrome plated like the bumpers in car kits?
Stephen Laminack

The RF-4E can be made by recontouring the nose of the Testor/Italeri kit and adding late-model afterburner nozzles. Minicraft/Hasegawa has just released a 1/48 scale F-4EJ. The F-4S is nothing more than a slatted F-4J. Later this year, Minicraft/Hasegawa will release a 1/48 scale F-4G Wild Weasel; the slatted wings from this kit could be combined with the Minicraft/Hasegawa F-4J to produce an accurate F-4S.

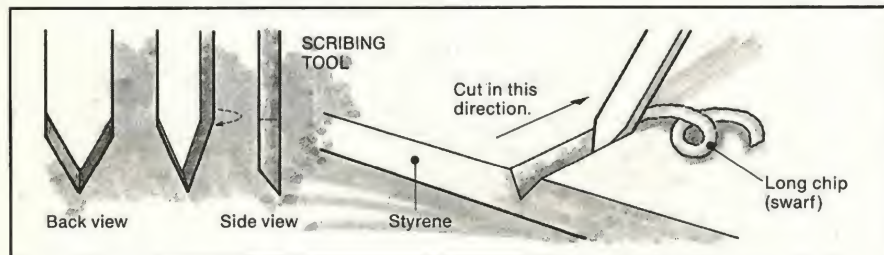
There's a problem with producing the British Phantoms (F-4K and F-4M); they are not simply F-4Js with British roundels. The larger-diameter Rolls-Royce Spey engines dictated a noticeably deeper rear fuselage to accommodate them. The intakes were also enlarged and there were changes to the nose gear strut and new afterburner nozzles were fitted. A few years ago Revell produced a 1/48 scale F-4M, but this was nothing more than its F-4J kit with new afterburner nozzles and British markings. Perhaps someday we will have an accurate 1/48 scale British Phantom kit.
P. B.

Yes, there is a custom chrome plating service, although I don't know how much it costs to have your parts plated. Write to Plastichrome, W157 N9790 Glenwood Road, Germantown, WI 53022. When you write for prices, tell them what you need and ask how long it will take to get your parts back.
P. B.

Engraved panel lines. What's the best way to restore engraved panel lines in my models? When I putty and sand, the kit panel lines get obliterated. I've tried using a knife blade, but it just doesn't seem to do it right.

Bruce Beamish

One of the old tried and true methods of engraving plastic is to use a scribing tool. You can make one from a broken drill bit, file, or a small screwdriver bit.



You'll need to grind a chisel point to the tool and keep it sharp. The trouble with the knife blade is that it really doesn't remove plastic, it just pushes it aside, creating a ridge on either side of the cut. The scriber, on the other hand, removes the plastic in a long, curly chip (or swarf) in one or two passes. Use a metal straightedge to keep the panel lines straight. If the tool doesn't cut cleanly, it probably needs sharpening.

P. B.

KC-97 kits. I read David Boksanski's article on building the Boeing B-50 (Summer 1983) and would like to know where to obtain a 1/72 scale KC-97 kit used for the conversion. Also, is there a 1/72 scale kit of the Fairchild C-123 Provider?

Duane Radke

I'm not sure whether the RARE-planes KC-97 vacuum-formed kit is still available; you should write direct to RAREplanes, 69 Redstone Hill, Redhill, Surrey, England, for availability and price. White Eagle Vacu-Form Co., P. O. Box 1834, Dearborn, MI 48121, also produces a C-97 kit and will soon have a tanker version as well.

The C-123 Provider was made by Airmodel of Germany and may still be available from W. R. W. Imports, 10 South Havana, No. 108, Aurora, CO 80012, or Combat Models, 1633 Marconi Road, Wall, NJ 07719.

P. B.

Airbrush trouble. I'm still getting used to my new Badger 350 airbrush, but there's one problem I haven't solved. I'll be spraying along when suddenly I'll get little spots of another color marring what would otherwise be a nice paint job. What's wrong with my airbrush?

Tim Fischer



It doesn't sound like the problem is with the airbrush. What you're getting is little chunks of dried paint from a previous painting session. They're loosened from the inside of the needle housing or the paint siphon by fresh paint. Simply blowing thinner through the airbrush after every color sometimes isn't enough to thoroughly clean it. If I'm spraying one color after another in one sitting, I'll take the airbrush apart and clean it after every three colors.

Take the needle housing (the tip) apart and inspect the inside. If there is some hard, crusty buildup, soak the parts (tips up) in a small jar of lacquer thinner for an hour. Clean the rear portion of the tip with a cotton swab and pipe cleaner soaked in lacquer thinner. The front portion should be cleaned carefully with a thin pipe cleaner. Don't jam it into the tip; the metal at the tip is thin and easily damaged by the wire in the pipe cleaner. Also clean out the siphon in the paint jar or cup. Now you're ready to reassemble the airbrush and move on to the next color.

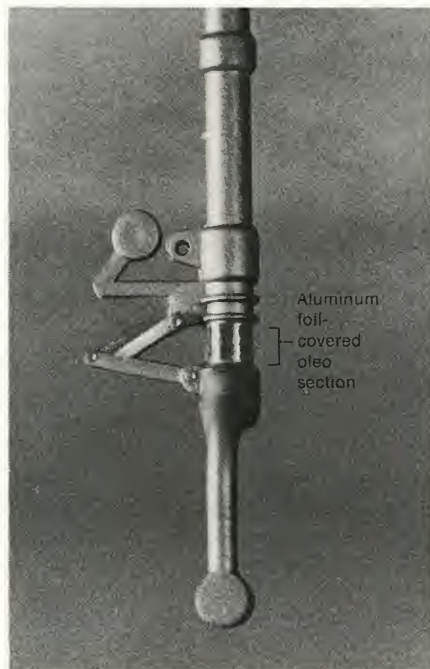
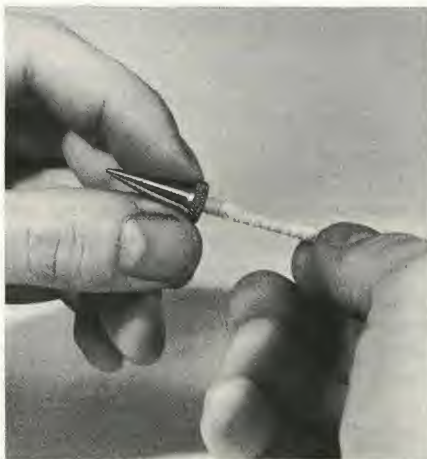
P. B.

Oleo struts. I recently saw a model at an IPMS show that had chromed oleo portions on the landing gear struts. I never did meet the modeler, but thought you might know how this effect can be produced.

Bill Humbert

There are two ways of doing that. One is to replace the plastic oleo section with a piece of chrome tubing. The easier way is to glue a piece of aluminum foil to the section and trim away the excess. I use Bare-Metal Foil since it already has an adhesive on it. I burnish the foil down with a cotton swab stick. It's easy to hide the seam behind the "scissors" of the strut. The effect is most noticeable if the remainder of the strut is painted flat aluminum, white, or any dark color.

P. B. **FSM**



SUPER GLUE FOR PLASTIC KITS

PLASTI CA+++ZAP™



Rapid initial "tacking" cure in 10-20 seconds, full cure in 1-3 minutes!



Cures cleanly, clearly! Will not attack painted surfaces!



Excess adhesive removed with Z-7™ Debonder.



Can be used with "Zip-Kicker" for ultra fast building!



Non-flammable/non-sniffable!



1/3 oz. net wt. PC-19 \$2.98
(9.47 gm.)

Plasti-Zap/CA+++™ is a specially formulated cyanoacrylate adhesive designed for assembly of plastic model kits or plastics "scratch building" projects. The adhesive chemistry will screen-out any mold release agents present on parts, and bonds all types and formulations of plastics used by the various plastic kit manufacturers.

THIS PRODUCT IS GUARANTEED 12 MONTHS SHELF LIFE

Cars



Boats



Trains



Planes



Available From

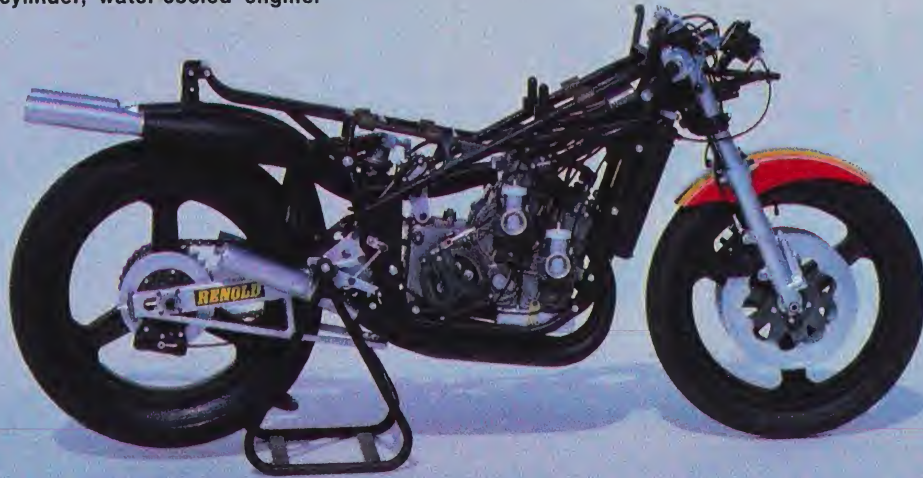
PACER TECH®

...setting the pace for technology

Pacer Technology & Resources, Inc.
1600 DELL AVENUE ■ CAMPBELL, CALIFORNIA 95008 ■ (408) 379-9701
TELEX: 172435 (Pacer Tech Cmpl) (800) 538-3094 (Except California)



Fig. 1. Removing the fairing and gas tank reveals the superdetailed 4-cylinder, water-cooled engine.



Superdetailing 1/12 scale motorcycles

Techniques you can use to improve any motorcycle model

BY PAUL BUDZIK

BEGINNERS CAN build outstanding motorcycle models. First, many of the kits now on the market, particularly the 1/12 scale plastic kits from Tamiya, are superb. Second, it's rela-

tively easy to add texture and refine details on most parts. Third, the models lend themselves to simple but striking paint jobs.

For this article, I built three 1/12 scale Grand Prix racers from Tamiya kits — a Yamaha YZR500 (No. 1401)

and two Suzuki RGB500s, one in Team Suzuki markings (No. 1403), and one in Team Galina markings (No. 1409). I will use them to show how you can make injection-molded plastic look like cast, machined, or stamped metal and to demonstrate how you can add realis-



tic details to injection-molded parts.

Turning plastic into metal. Metal parts on a full-size motorcycle are bare, chrome-plated, or painted, and they vary considerably in color and texture. For example, in Fig. 1, which shows one of the Suzukis with its fairing removed, and Fig. 2, which shows engine parts before assembly, note that the cylinder heads are semigloss black, the cylinder sides are flat aluminum, and the block is darker still.

Figure 3 shows portions of the Yamaha engine (also a water-cooled two-cycle) — the heads are shiny, the cylinders are dull aluminum, and the block is a grainy metallic gray. In both cases, it was easy to achieve the correct metallic shades. The shiny metal is airbrushed Testor Silver enamel (1146), while the darker metals are Floquil Old Silver (100) with varying amounts of Floquil Grimy Black (13) added. I apply the Old Silver and Grimy Black mixtures by airbrush using greater than normal air pressure. The extra pressure causes the paint particles to settle with a slightly grainy or pebbled effect that simulates the texture of cast metal.

After painting a cast-metal part the appropriate color, I often give it greater depth with a wash of three parts thinner to one part black (the type of paint isn't important). I apply the wash to the entire part, allowing it to flow into all of the recesses. After the wash has dried for several minutes, I moisten a cloth with thinner and remove all

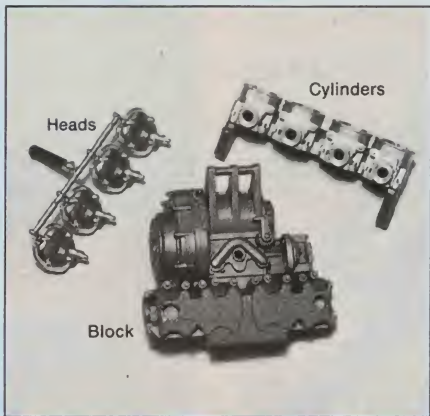


Fig. 2. Metal engine parts range in color from light gray to black and vary in texture as well. These are the major parts for the Suzuki engine.

traces of the wash from raised or flat areas, leaving only a subtle darkening in depressions and corners.

After the wash has dried for a day or more, I sometimes apply a little Treasure Gold brand silver wax gilt paste* to the raised areas with a soft cloth. Treasure Gold products are available in at least three gold colors as well as silver and brass; they're packaged in 1-ounce jars and are sold in crafts and art supply stores for about \$3.00 a jar.

As a rule, I highlight nuts and bolts with a different color than the parts to

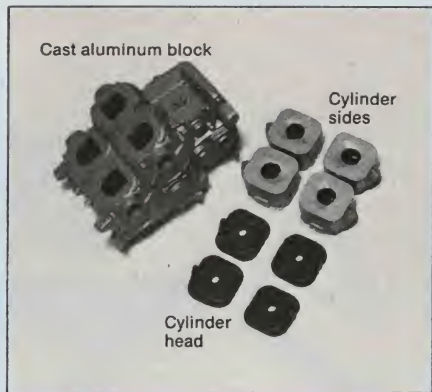


Fig. 3. On this 4-cylinder Yamaha engine the shiny aluminum on the heads is Testor Silver; the duller cylinders and block were painted with Floquil Old Silver mixed with varying proportions of Grimy Black.

which they are attached. In other words, if a part is very shiny, I may make the bolts a darker steel color. If the part is dark a lighter-colored bolt often looks better. In all cases, I try to get some color down the sides of the nut or bolt to make the nut or bolt more visible when viewed from different angles.

Refining parts. Figure 4 shows the headset (handlebars) of one of the Suzuki bikes before and after I added details to this plastic part, and Fig. 5 shows the brake master cylinder parts before they were added to the headset. None of the changes to the brake, clutch, and throttle assemblies was dif-

*Plaid Enterprises, Inc., 1649 International Boulevard, Norcross, GA 30091.

Each of the author's 1/12 scale Grand Prix motorcycle models is approximately 7" long; all are built from Tamiya kits.



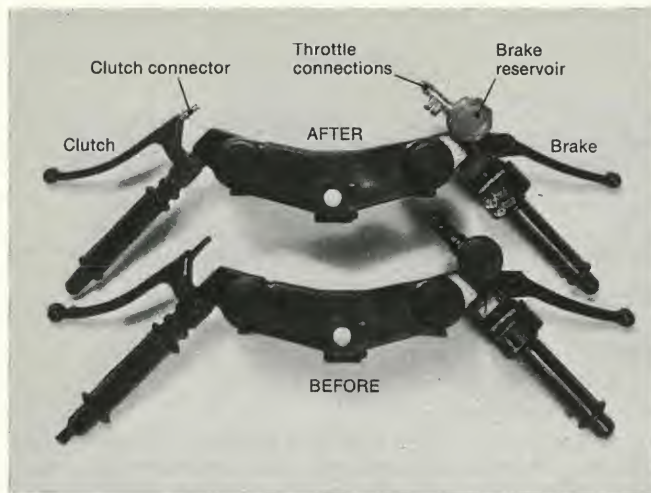


Fig. 4. The author's changes to the Suzuki headset give it a lighter, more precise appearance.

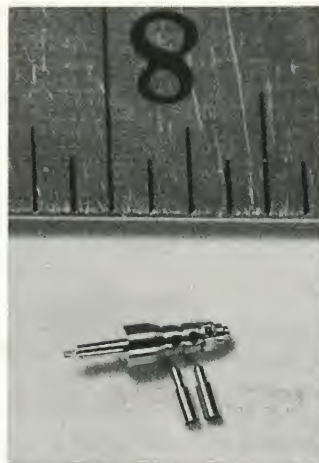
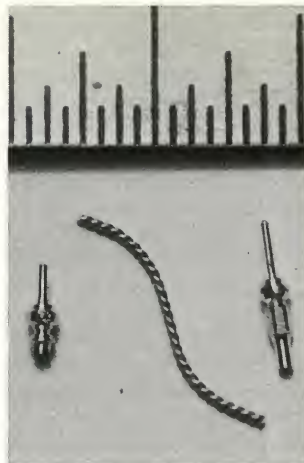


Fig. 5. Paul turned these parts for the Suzuki brake master cylinder from metal rod. Fig. 7. The couplers for the anti-dive mechanism are turned metal; the hose is twisted wire.



difficult to make, but collectively they greatly improve the appearance of this portion of the model.

It should be clear by now that I always use whichever techniques and materials give the best results with the least effort. In this case, the master cylinder parts are metal rods turned on a lathe while the reservoir is plexiglass.

The before-and-after photo of a Suzuki front fork, Fig. 6, makes the same point. The fittings on the anti-dive mechanism are lathe-turned metal, the connecting line is twisted wire, and the insert in the axle housing is .050" styrene cut and filed to shape. Figure 7 is a close-up of the anti-dive fittings and connecting line before installation and Figs. 8 and 9 show how I modified the axle housing. In each case note that I used as much of the kit parts as possible, adding or changing only those por-

tions which the manufacturer could not adequately represent on an injection-molded part.

Wires, hoses, and clamps. All wires and hoses should have some sort of connector or clamp at each end, yet these seldom appear on molded parts. You can often simulate a connector for spark plug wires by slipping a piece of larger diameter tubing over the end of the wire, Fig. 10. Wire hose clamps are almost as easy — cut a shallow groove on the hose where the wire will go, wrap the wire around the hose, twist its ends tightly, and snip off the excess, Fig. 11. In Fig. 11 the upper hose, the one running from the radiator to the cylinder head, is a piece of miniature

hose, while the lower hose, that running between the cylinder heads, is a molded kit part which I polished to match the texture of the real hose.

Clutch, brake, and speedometer cables and wires for lights and turn signals seldom exceed 1/4" diameter on even the largest full-size motorcycle. Reduced to 1/12 scale that 1/4" is only .020", about the diameter of the period at the end of this sentence, so replace oversize kit parts with smaller cables made from brass or copper wire or lengths of small-diameter solder meant for electronics assembly.

If the oversize wire was meant to fit onto a molded stub of some sort, file off the stub, drill a hole a little larger than

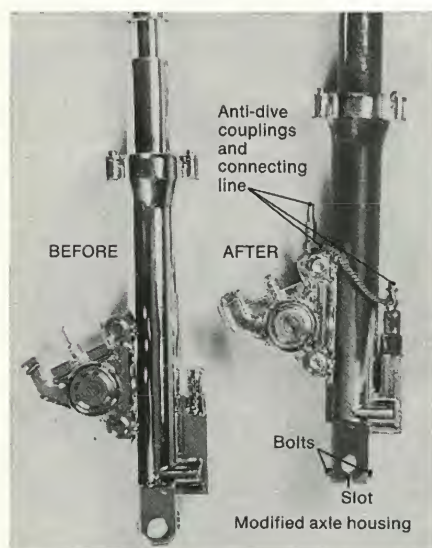
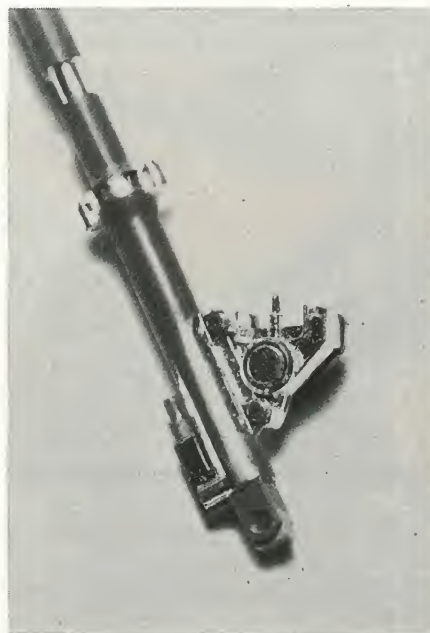
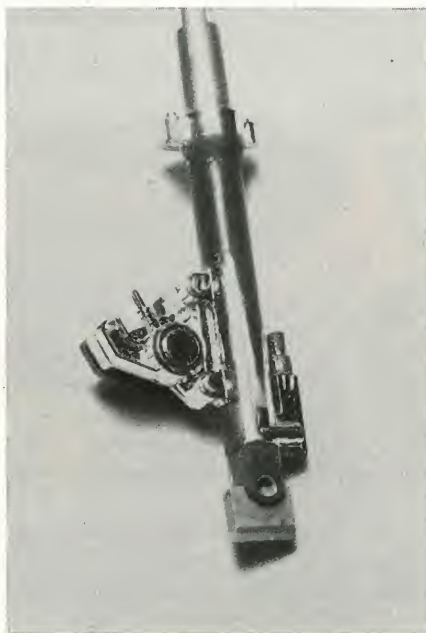


Fig. 6. The Suzuki front fork before and after Paul refined the details on the axle housing and anti-dive mechanism.



Figs. 8 and 9. Whenever possible Paul simply improves kit parts. These photos show how he refined the axle housing by first cementing a piece of .050" styrene into a slot at the lower end of the housing. Figure 6 shows that he then filed a V in the bottom of the housing and placed two bolts in its ends.

the diameter of your replacement wire, and glue the new part into the hole.

Concealing oversize screw heads.

On many models the rear wheel is fastened with a machine screw whose head remains visible, Fig. 12. The screw head should be reworked to resemble a nut or bolt head or it should be countersunk and capped with a scratchbuilt part simulating a nut, bolt head, or axle end. When countersinking the screw, I first remove as much of the screw head as I dare, then deepen the hole in the part. If the part is thin, use a flat-ended cutter such as Dremel No. 193 rather than a drill because the taper on the end of a drill might weaken the screw's seat, allowing the screw to break right through the part. I usually make caps for screw heads from plexiglass rods, but sprue also works well.

Improving instrument panels. I told how to make instrument faces from photographic negatives in the Winter 1982 FSM, so I won't repeat myself here. I will say though that careful preparation of the kit instrument panel really pays off, Fig. 13. On my cycles, I carve a groove around the inside of the bezel just wide enough to accommodate the thickness of the negative. I then trim and file the instrument face so that it is round and only slightly larger than the diameter of the bezel. When the face is perfectly round and the correct size, I place one edge of it into the bezel and tease the remainder into the groove with a toothpick, Fig. 14. The instrument face must be round to begin with because the groove is not deep enough to conceal large discrepancies. Finally, install a glass or plastic cover or apply a clear varnish cover.

Modifying fairings. I'll use the Suzuki front fairing, Fig. 15, to show how to assemble and modify fairings, fuel tanks, and seats. On real cycles these are made from fiberglass or stamped metal and are invariably smoothly finished. If a clear plastic windshield is present, it is bolted to the fairing in such a way that the joint between the fairing and the clear plastic is flush or nearly so.

I began to assemble the front fairing by removing all locating pins on the fairing halves. Rubbing the edges of each half across a sheet of No. 320 or 400 sandpaper removes these lugs and also ensures a solid and flat joint that will require little filler when the halves are bonded.

I then glued the halves together with Testor liquid cement, forming a tiny bead of dissolved plastic and liquid cement along the seam. Next, I cemented the clear plastic windshield to the rest of the fairing, again using Testor liquid cement.

I make a home-brew filler by dissolv-



Fig. 10. One way to simulate a connector is to place a small piece of larger diameter tubing, such as black vinyl insulation stripped from hookup wire, over the cable or line. This technique is especially effective with spark plug wires.

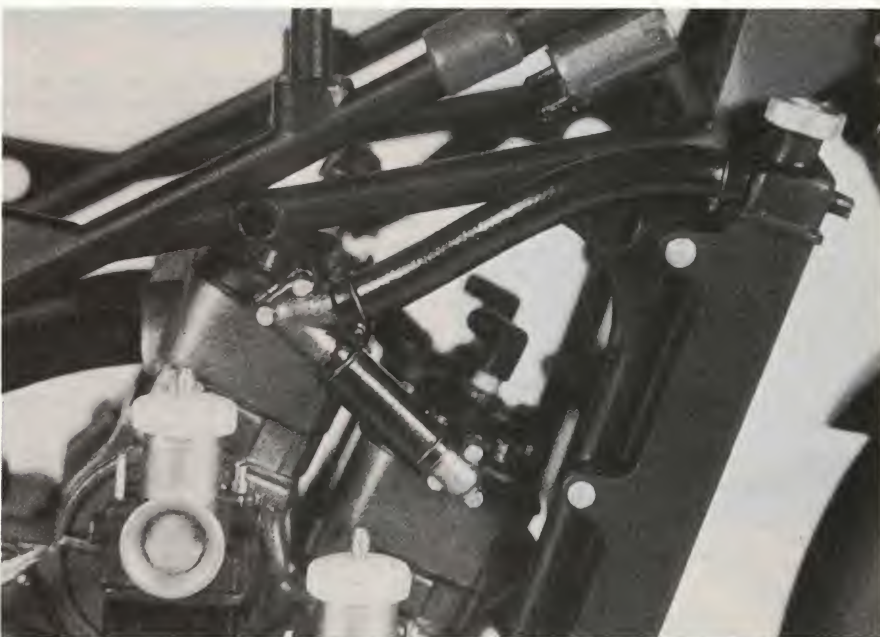


Fig. 11. File a shallow groove in the hose before adding a wire hose clamp so that the wire will seem to be actually compressing the hose.

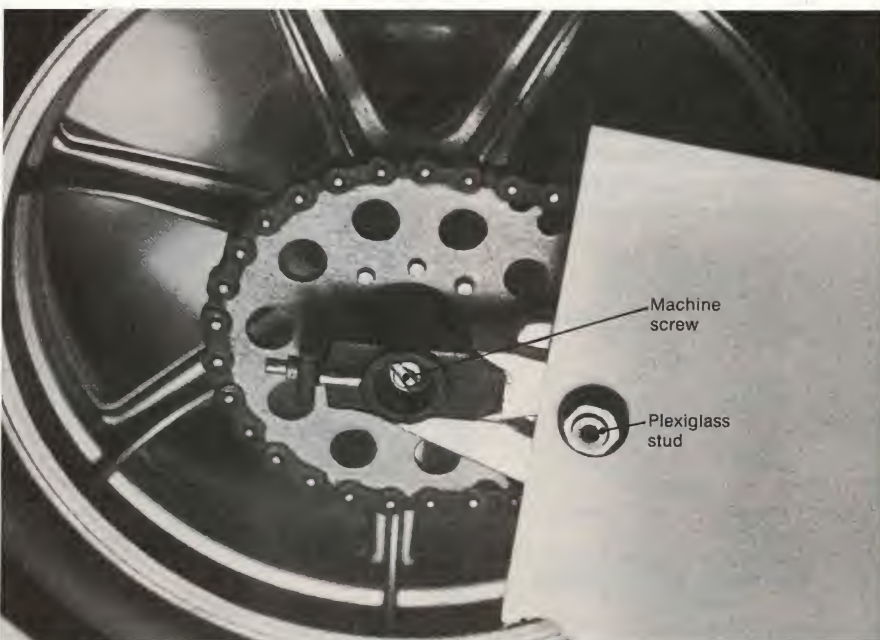


Fig. 12. Modify or conceal the heads of machine screws. Here Paul's about to cap the countersunk screw head on the rear axle with a turned plexiglass stud.



**LITTLE
GENERALS**

Canadian Mail Orders!

One of the largest selections of
plastic models, books, decals and lead figures
available in Canada

"Send your request or inquiries to our retail
location with self-addressed stamped
envelope"

No. 9 South Centre Mall,
100 Anderson Rd. S.E.,
Calgary, Alberta T2J 3V1
Tel. (403) 271-0662.

The SOURCE For...

Casting resins and
mold making materials

"Make one or
one thousand
with Castolite."

Catalogue \$1.00

CASTOLITE

Dept. 84 D/FS
P.O. Box 391
Woodstock, IL 60098



Paul Freiler's HISTORICAL MODELS

19510 Hawthorne Blvd
Torrance, California 90503

(213) 542-6391

Hours: Mon-Sat 10-9, Sun and Holidays 11-6

SPECIALIZING IN PLASTIC KITS

- Aircraft • Automobile
- Armor • Ships

TOOLS

- Unimat • Dremel
- X-acto • Paasche

GAMES

- Software • Strategy
- D&D • RPG

BOOKS

- Aircraft • Automobile
- Ships • Armor

ALL MAJOR MODELS AND
MAGAZINES—BOTH FOREIGN
AND DOMESTIC

- MICROSCALE, SCALE MASTER,
ATP, FOWLER, ETC. DECALS
- POLLY S, FLOQUIL, HUMBROL,
PACTRA, TESTORS, TAMIYA, PAINTS
- HO TRAINS AND ACCESSORIES



Fig. 13. Before mounting an instrument face, carve a shallow groove in the bezel to which it will be attached.

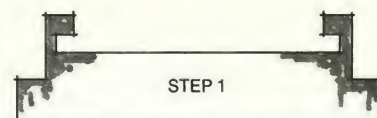
ing bits of chopped sprue in Testor plastic cement, adding pieces of sprue until the mixture has the consistency of molasses. This filler strengthens the joints to which it is applied, though it takes a long time to set and should only be used in small quantities. In Fig. 15 note that I've filled and sanded the joint between the clear plastic windshield and the fairing until the seam is perfectly smooth and that I've sanded off all details such as rivet and bolt heads, which can be restored after the fairing is painted.

I then polished all parts and masked the windshield to protect it while I primed and painted the fairing.

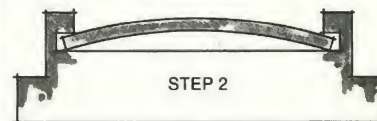
Applying undercoatings for light-colored decals. Still using one of the Suzukis as an example, observe that most areas where two colors meet feature a white stripe. Note also that the yellow backgrounds around the black numerals are surrounded by blue. The



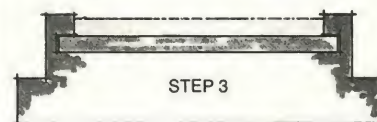
Fig. 15. All parts of the fairing must be smooth before any paint is applied. The plastic windshield on the Suzuki fairing is milky at this stage but will be polished until it is perfectly clear.



STEP 1
Carve shallow groove in bezel.



STEP 2
Tease photo negative instrument face into groove.



STEP 3
Cover face with glass, varnish, or clear plastic.

Fig. 14 MOUNTING
INSTRUMENT FACES

kit provides decals for these stripes and for the numerals and yellow backgrounds but because the white stripes and yellow backgrounds are so much lighter than the base colors, the base colors can show through the decals, ruining the effect. For example, if the yellow decal were applied directly over the blue base color, the background would appear muddy green, not bright yellow. Similarly, the white stripes would appear pink.

If the bare plastic is light colored, a solution is to carefully mask the light area, paint the darker colors, remove the masking over the light area, mask the dark areas, and apply the light-colored decals.

If the bare plastic is dark colored, mask all of the dark areas, apply a white primer to the light areas, remove the masking from the dark areas, paint and mask over them, and apply the decals to the white-primed areas.

In either case, the secret to success is accurate masking. Here are two masking techniques I've found useful. First, make a photocopy of the decal sheet, Fig. 16, then cut stencils from the copy. You may choose to wet the paper stencil with water, apply it directly to the model, and trace around its edges with a pencil. You could also lay the stencil on a piece of masking tape and trace its outline onto the tape.

Occasionally, you may find it easier to apply two identical decals over a darker base color than to apply a light undercoat — that's what I did when applying the yellow decal against a blue background in Fig. 17.

Achieving equal thickness for all colors of paint. Let's say that you've painted an entire fairing a light color and then decide to apply a darker color

over only part of the fairing. Use the thinnest possible paint, often a Floquil lacquer, for the second coat or you'll end up with an unsightly ridge where the colors join. Even with Floquil, after you've removed the masking and the paint has dried thoroughly, lightly scrape the edge of the raised line where the colors join. If you used an enamel for the second color, you'll probably also have to sand this edge with No. 400 wet-or-dry sandpaper used wet. I have found 3M Wetordry to be the best brand — pieces of abrasive don't come loose and embed themselves in the paint as sometimes happens with other brands.

Applying a clear gloss coat. I protect parts painted in a gloss finish on the real motorcycle (for example, fenders, fairings, and gas tank, but not the frame or engine) with a clear gloss coat. I'm presently using Delclear, a two-part acrylic urethane from PPG Industries, Fig. 18. I prepare a mix of 2 ounces of Delclear, ¼ ounce of hardener (called Delthane Ultra Urethane Additive), and ½ ounce of thinner (Delstar Acrylic Enamel Reducer) and airbrush this onto the parts.

After the clear has dried for several days, I gently wet sand the parts with No. 600 wet-or-dry until all parts have a uniform dull finish. The idea here is to remove any tiny irregularities on the surfaces — be careful not to sand all the way through the clear into the decals. If any irregularities remain, apply a second coat of clear and sand again.

The final coat of clear is meant only to restore the gloss, so dilute the mixture with an additional ½ ounce to 1 ounce of thinner and mist it onto the parts.

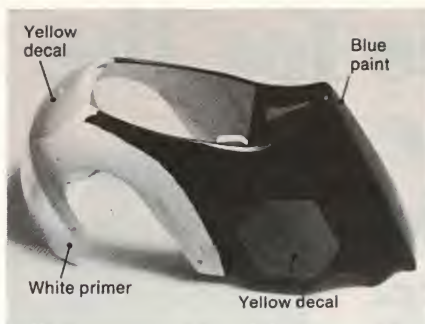


Fig. 17. A light-colored decal applied over a darker background can change color. Here the yellow decal appears a muddy green because the blue shows through. Paul solved this problem by applying a second yellow decal over the first, though he usually prefers to mask around the area to be decal and then primes it with a light-colored paint.



Fig. 16. Photocopy the decal sheet, then cut stencils from the copy.

I hope you find these tips useful. Perhaps the photos of the completed models and the knowledge that 1/12 scale cycles are not difficult to build will inspire you to try one. **FSM**



Fig. 18. Paul reports that Delclear acrylic urethane from PPG Industries is an excellent non-yellowing clear coat. It is sold in auto parts stores.

Museum Quality Miniatures



Creators of historical miniatures for museums and collectors for over 30 years. Look for our "Ragtag Drummerboy" at your local hobby supplier. Our complete Catalog 151, fully illustrated with photos of our 54 mm and 76 mm kits, is available direct from us for \$3.00.

I/R MINIATURES, INC.
P.O. BOX 89, Dept. M
Burnt Hills, NY 12027, U.S.A.

SCRATCH MODELERS

Plans, plans and MORE plans: - Warships of all leading nations and others - Pre-WW I, WW I and WW II; Submarines; U-Boats; PT-Boats, Schnellboots; Landing Crafts; Sailing Models; Class Yachts; Tugs; Trawlers; Freighters; Tankers; Liners; Hovercrafts; Paddle Steamers and River Boats; Sail; Whalers; Period; Historical; Local and more. Also Steam and Marine Engines. You will find them all in TAUBMAN'S 83/84 Boat catalog of a whopping 140 pages - PLUS the 83/84 MAP Plans Handbook No. 2 for boats and cars for \$3.50 plus \$1.50 for domestic 3rd class shipping. (Can., Mex. and overseas surface mail \$2.50. Airmail -Eur. & So. Amer. \$7.00; Pac. area \$9.00). Those interested in warships, liners and merchant marine send an additional \$1.00 for the Wiswesser catalog.

MAP #3 catalog for Engines - Marine, Steam, Loco., Planes. \$2.00 plus \$1.00 postage.

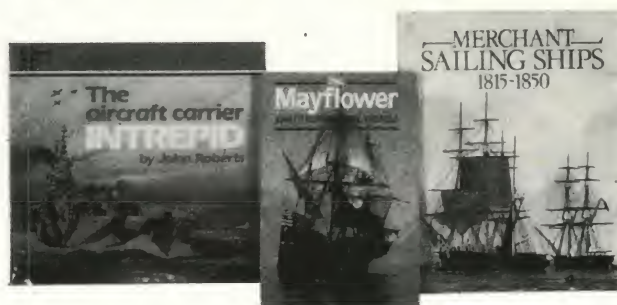
So, if you are planning on buying plans, plan on buying the plans from

TAUBMAN PLANS SERVICE

11 College Drive
Box 4G - Dept. FSM
Jersey City, N.J. 07305

(When sending inquiries, please include a S.A.S.E.)

References for the Modeler from the Naval Institute Press



Conway's All the World's Fighting Ships, 1947-1982

Part I: The Western Powers Part II: The Warsaw Pact and Non-Aligned Nations

This detailed, two-volume reference provides a comprehensive picture of postwar naval affairs, from the largest political issues to the minute technicalities of warship design.

Part I: 298 pages. 283 photos. 237 line drawings.

#9189 \$34.95

Part II: 243 pages. 250 photos. 240 line drawings.

#9197 \$34.95

The Cutty Sark: The Ship and a Model By C. Nepean Longridge

This famous study, by the dean of British sailing ship historians, combines two separate volumes considered among the most detailed treatise on an individual ship ever written. It contains scores of illustrations and instruction on building the model *Cutty Sark*. 232 pages. 173 illus. Apps. Index.

#8336 \$12.95

Anatomy of the Ship: The Aircraft Carrier Intrepid and The Battlecruiser Hood

By John Roberts

These first two volumes in a popular new ship-design series offer a treasure chest of information on these famous WWII warships. Roberts has prepared over 200 keyed line drawings for each book as well as full descriptions of their design, construction, general arrangement, and much more.

The Aircraft Carrier Intrepid. 128 pages. 270 illus.

#9014 \$21.95

The Battlecruiser Hood. 96 pages. 270 illus.

#0785 \$21.95

Aircraft Carriers of the World, 1914 to the Present

By Roger Chesneau

The first comprehensive reference work to detail the world's aircraft carriers in a single volume. 256 pages. 300 photos. 200 line drawings. Biblio. Index.

#9022 \$27.95

U.S. Aircraft Carriers: An Illustrated Design History

By Norman Friedman with ship plans
by A.D. Baker III

This complete evolutionary history contains detailed information on every U.S. carrier class. Included are flight deck plans, outboard profiles, sketches of major design studies, and descriptions of several unique carrier proposals. 427 pages. 321 illus. Apps. Index.

#7399 \$46.95

Merchant Sailing Ships, 1815-1850

By David MacGregor

A beautifully illustrated, comparative study of the mainstream of merchant ship design. Includes Blackwell frigates, North American packet ships, whalers and other specialized types, as well as standard small brigs and schooners. 192 pages. 110 photographs. 100 line drawings. Apps. Ref. Index.

#9413 \$21.95

Greyhounds of the Sea, Third Edition

By Carl C. Cutler

The definitive study of American clipper ships now back in print in a handsome new edition that includes an extensive appendix with 500 sailing ship records. 720 pages. 100 black & white and color plates. App.

#232X \$32.95

The Mayflower and Other Colonial Vessels

By William A. Baker

An illustrated history of the design, construction, and rigging of early colonial sailing ships. 180 pages. 66 illus. App. Biblio. Glossary.

#8433 \$15.95

S.S. Great Britain: The Model Ship

By William Mowll

The step-by-step development of a working replica of a ship that represents the transition from sail to steam. Handsomely illustrated with black & white and color photos. 190 pages. 340 illus. Biblio. Index.

#8662 \$22.95

Ship of the Line Volume I: The Development of the Battlefleet, 1650-1850

By Brian Lavery

Provides a general historical background and includes appendices listing all ships of 50 guns or more, divided by period, rate, rigging, armament, and fittings. 224 pages. 200 illus. Apps. Notes. Biblio. Index.

#6317 \$29.95

Ship of the Line Volume II: Design, Construction, and Fittings

This volume is devoted to technical developments in hull design, construction, rigging, armament, and fittings. 192 pages. 250 illus. Notes. Index. Apps.

#9537 \$29.95

Customer Service

U.S. Naval Institute, 2062 Generals Hwy., Annapolis, MD 21401

FS4A

YES! send me the books indicated below . . .

Name _____ ☐ My check or money order is enclosed.

Address _____ Charge my ☐ VISA ☐ MASTERCARD

City, State _____ Acct.# _____ Exp. date _____

_____ Zip _____ Signature _____

Qty.	Title	Book#	Price	Total

Subtotal

M.D. Residents please add 5% sales tax

Postage & handling

Total Amount

POSTAGE & HANDLING charges are \$2.25 for orders up to \$15.00, \$3.00 for orders of \$15.01 to \$30.00, and \$3.75 for orders in excess of \$30.00.

☐ Send me a FREE fully illustrated book catalog.

David's Revell DC-8 Series 50 conversion in Panagra markings from Jet Set System. The constant diameter through most of the fuselage makes this an easy conversion.



Shrinking the "Stretch Eight"

Building a 1/144 scale DC-8 Series 50 from Revell's DC-8 Series 61

BY DAVID MINTON

THE JETLINER REVOLUTION of the late 1950s ended the reign of the four-engined, propeller-driven aircraft so long associated with luxury air travel. In Great Britain, de Havilland's Comet had overcome its tragic growing pains and proved that jetliners were practical and economical to operate. The Connies, DC-6s, DC-7s, and a few remaining Boeing Stratocruisers were removed from the major airline rosters to make way for the jets.

Douglas had a reputation of producing quality aircraft for the airlines since the debut of the DC-3 in 1935. Although DC-7s were still being developed as late as 1955, Douglas had to produce a jetliner to keep up with its competition. Lockheed developed the

propjet Electra, and Convair brought out its 440, but Boeing's 707 was the first American jetliner to see service.

The Douglas DC-8 jetliner first flew on May 30, 1958, nearly four years after the maiden flight of Boeing's 707 prototype. Douglas had a lot of catching up to do. Since many of the airlines had bought, flown, and trusted Douglas equipment for years, some of them passed up ordering the 707 and waited for the DC-8.

The first version of the DC-8 was the Series 10, powered by four Pratt & Whitney JT3C turbojet engines. Douglas installed the JT3D turbofan, which offered more thrust with less fuel consumption and noise on its DC-8 Series 50. The Series 50 was top-of-the-line for Douglas until the stretched Series 60 aircraft appeared in 1966.

Revell's DC-8 kits. Revell has produced two kits of the DC-8 in 1/144 scale. Its first kit was the DC-8 Series 10 with the early turbojet engines and standard fuselage. Revell then brought out the DC-8 Series 61 "Stretch Eight." This kit features the lengthened fuselage and the newer turbofan engines.

Both kits have been reissued many times, with many different markings, Fig. 1. Although there have been no other changes made to the molds, Revell has issued the Series 10 kit as a Series 50, which it is not. Revell also reissued the Series 61 as a Series 63 without making new engine nacelles for the Series 63 version.

There are two ways to produce the DC-8 Series 50 from these kits. The easiest is to combine the short fuselage from the Series 10 kit and the wings

United Airlines DC-8 Series 50 approaches Chicago's O'Hare International Airport, February 1978. Note Fowler flaps and lack of any leading edge flaps.



Gary W. Dolzall

and engines from the Series 61 kit. Fortunately, the parts are interchangeable, but each kit may cost between \$7.00 and \$12.00, making the Series 50 an expensive project.

Shortening the Series 61 fuselage.

The cheaper method is to buy only a Series 61 kit and shorten the fuselage. To produce the DC-8 Series 61 Douglas stretched the DC-8 fuselage 36' 8" by inserting a 20' plug ahead of the wing and a 16' 8" plug aft. Revell's Series 61 kit was a bit too long, so I removed two sections of equal length, Fig. 2. This corrected the fuselage error, producing an accurate length for the Series 50. I removed two sections equivalent to six windows (1.69") each. If you have never sectioned a fuselage before, here are some helpful hints.

Cut each fuselage half before assembly. I make all the cuts in the fuselage exactly halfway between two windows to provide a constant reference point. The cuts could be made at the forward edge or rear edge of a window, just as long as all the cuts you make are at the same point in relation to the windows. Otherwise, you might end up with one side of the fuselage slightly longer than the other side!

I used a razor saw to cut the fuselage in a small miter box. If you don't have a miter box, you can make a simple perpendicular cutting guide on paper, Fig. 3. Draw a horizontal line with a vertical line intersecting it at the halfway point. Place the bottom of the fuselage half along the horizontal line and cut the fuselage, sighting down the vertical line. The result is not quite as precise as using a miter box, but it is a whole lot better than simply eyeballing the cut.

Before starting the cuts, use a modeling knife to cut a small notch in the fuselage, Fig. 4. This provides a starting place for the saw and prevents it from skating across the smooth, slippery plastic.

I cut ¼" strips from the sections that were removed from the sides and ce-

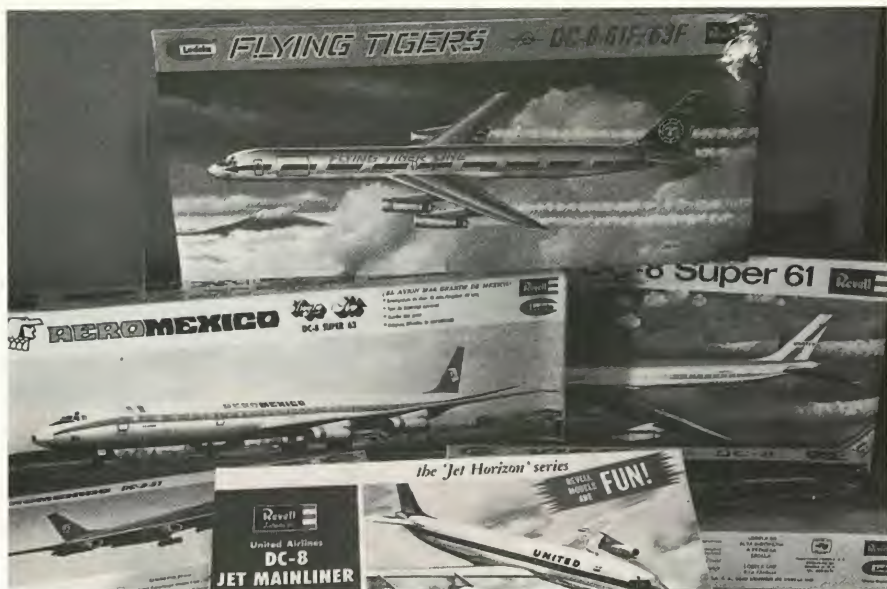


Fig. 1. Revell's DC-8s have been released many times, but despite the box top designations they are either the Series 10 or Series 61.



FINESCALE MODELER: A. L. Schmidt

Fig. 2. DC-8 Series 50 fuselage conversion.

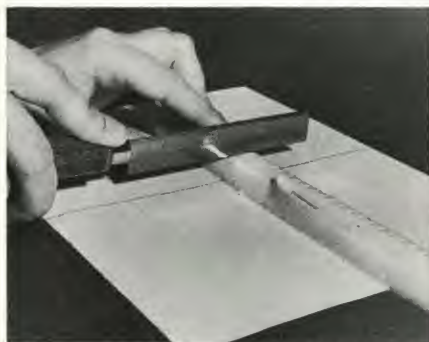
mented them inside the fuselage at the joints to reinforce them, Fig. 5. They have just about the same curvature as the interior of the fuselage halves. Thin strips of .020" or .030" sheet plastic also work well.

Before completing assembly of the fuselage, I placed ⅝ ounce of lead in the nose so that the shortened model would rest properly on its nose gear.

After the fuselage was assembled, I

puttied and sanded the cuts, windscreen, and all the windows. The kit has no clear parts, merely indentations for the windows and windscreen. The model looks better if the indentations are puttied and sanded flush, and decals used to represent the glass areas.

Correcting the elevators. Revell's elevator hinge line is incorrect. I filled the recessed hinge line with putty and sanded the area smooth. I used an X-



FINESCALE MODELER: A. L. Schmidt

Fig. 3. A perpendicular guide on a piece of paper can be used if you don't have a miter box. Carefully sighting along the vertical line keeps the saw cutting straight.



Fig. 4. Use a hobby knife to cut a notch in the fuselage. This provides a starting point for the razor saw which might otherwise skip on the smooth plastic.



FINESCALE MODELER: A. L. Schmidt

Fig. 5. Use pieces of the discarded fuselage sections to reinforce the joints.

Figs. 7, 8, and 9. DC-8s wore a variety of colorful livery. Big-D-Cal's Delta sheet was made for the DC-8 kit while the Air Jamaica markings came from two Scale-Master DC-9 sheets. The Trans Caribbean markings were hand painted.



acto knife to rescribe the new hinge line, Fig. 6.

Colorful markings. Now that we have created an accurate DC-8 Series 50, we can use some of the colorful decals available for this version. The United decals in the Revell DC-8 Series 61 kit can be shortened to fit the Series 50. Microscale's sheet No. 44-25 contains the latest United markings along with a National Airlines scheme. Both

of these are designed to fit the Series 61 kit and can be cut down since both of these carriers flew the Series 50 in these schemes as well. Also available is No. D-001 Delta DC-8 Series 50 from Big-D-Cal, Fig. 7. All these decals provide cheat lines with blanks for the windows.

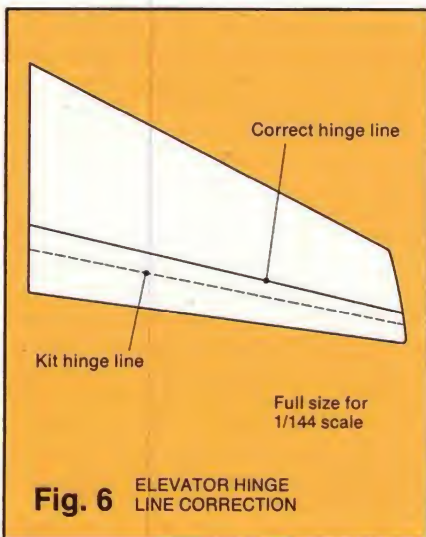
Jet Set System sheet No. JSD-101 is for a Panagra DC-8 Series 50, and No. JSD-120 is for a Braniff International DC-8 Series 55F. Neither of these includes windows or door outlines. Fowler's sheet No. FD-14 for a National Airlines "Sunshine" 727 can be modified to fit the DC-8. Figure 8 shows how two Scale-Master Air Jamaica DC-9 sheets (No. SM-11) can be combined to produce a striking DC-8. Starline sheet No. F002 has SAS markings for a Convair 990 that will fit the DC-8. It is possible to fit the Rareliners Trans Caribbean 727 sheet No. RD-03 to this kit. My model of the Trans Caribbean DC-8 was hand painted before this sheet was issued, Fig. 9.

There are a number of ways to simulate the cabin and cockpit windows on this model. For the decals that provide blank windows, paint or use a black or dark gray decal stripe underneath the decals. Another way is to use ATP's DC-8 window decals, sheet No. AD

5005. This sheet provides black windows plus silver window outlines commonly seen on current airliners. The windows could be drilled out and filled with Micro Kristal-Kleer, but this is the most difficult method.

The window arrangement on DC-8s varied according to the needs of the original owner. Since many DC-8s were sold from one airline to another, there are no solid rules to rely on. I always use photos for reference when spacing windows.

FSM



SOURCES OF DC-8 SERIES 50 DECALS:

- ATP, 3014 Abelia Court, San Jose, CA 95121.
- Big-D-Cal, available from ATP.
- Fowler Aviation, P. O. Box 148, Sunnymead, CA 92388.
- Jet Set System, 549 G La Rambla, Ponce, PR 00731.
- Microscale Decals, Krasel Industries, Inc., 1821 East Newport Circle, Santa Ana, CA 92705.
- Scale-Master Decals, 1525 West MacArthur Boulevard, No. 20, Costa Mesa, CA 92626.
- Starline Discount Hobbies, P. O. Box 38, Stanton, CA 90680.



Robert C. Mikesh

When he moved to his present home, friends accused author Bob Mikesh of purchasing a two-stall garage — with a house attached — specifically to accommodate his 315-piece World War Two and postwar recognition model collection!

Recognition models — the government-issue miniature air force

A look back at the roots of scale aircraft modeling

BY ROBERT C. MIKESH

HAVE YOU EVER WONDERED how 1/72 scale aircraft models got their start and became so popular? For that matter, when did the first plastic models appear? The answers may surprise you.

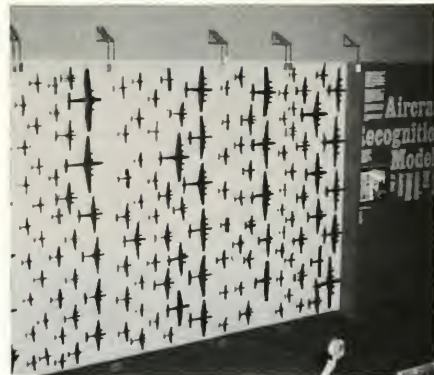
To state that anything was "the very first" is always a dangerous claim, but the answers to both questions can be traced, at least in part, to the thousands of 1/72 scale plastic models manufactured for Uncle Sam during World War Two. These models were used, both at home and abroad, as training aids for teaching aircraft recognition. With these scale miniatures in their hands or hanging in their classrooms and orderly rooms, our fighting men learned the shapes of the aircraft they might meet in combat — and thereby learned to recognize the differences between friend and foe.

Although a few early examples of plastic models had preceded the war years, for the most part the recognition models were the start of the most popu-

lar form of models we have today. In the early 1940s even the term "plastic" was a curiosity. Actually an early and crude form of acetate plastic, the material from which these solid, black models were cast was mistakenly called everything from "hard rubber" to "very hard plaster of Paris" to "wood compress" to "a form of Bakelite."

From war surplus to collector's items. After the war the "black ID models," as they were commonly called, became war surplus and began to filter into the hands of hobbyists and collectors. Less-fortunate collectors who did not have friends in the military to "liberate" the models occasionally found them in hobby shops; Polk's Model Craft Hobbies in New York and All-Nation Hobby Shop in Chicago were major outlets.

Craftsmen interested in scale collections often added their own customized paint schemes over the basic black, but such efforts were not altogether satisfactory, since colored dopes could not be used on the acetate plastic, and enamel colors were limited to what the local



Smithsonian Institution

The National Air and Space Museum in Washington displays this collection of recognition models in its WWII gallery. Seven nations are represented by 176 models, each with an identifying number keyed to the list on the wall at right. One collector of ID models is duplicating this exhibit for his own models.

paint store could provide in household paints. Now, almost forty years later, many of the recognition models have been duplicated by 1/72 scale kits. Since today's models are much more exacting and include much finer detail, I, for one, have found it practical to convert the ID models to their original condition for my recognition model collection.

Today, despite the thousands of ID models produced, so many that they were taken for granted by U. S. servicemen, they are practically impossible to find. Except for a few dozen large collections and isolated models kept by individuals as souvenirs, the recognition models are all but extinct.

Nevertheless, the ID models helped establish a new industry — manufacturing plastic models — and a constant scale — 1/72. After the war, shell models to supplement ID model collections were offered in 1/72 scale as well as other, random scales based on the desired size of the finished model.

The military takes up modeling. The program to provide ID models to the armed forces started the day after Pearl Harbor. Navy Commander (later Admiral) Louis DeFlorez had just returned from England where he had observed the British recognition program, which included the use of model planes in 1/72 scale. He had seen that as the student handled the models, they could be placed at every possible engagement angle, and because the models were black, features, not colors, were emphasized as the keys for identifying friend and foe. DeFlorez, who had been placed in charge of the Navy Bureau of Aeronautics, Special Devices Division, brought a few of the models back from England, thereby importing 1/72 scale to the United States.

Two men were prominent in estab-



(Left) A patternmaker puts the finishing touches on the wooden master model of the Blohm and Voss BV138. Plastic recognition models of this German trimotor flying boat are relatively rare in



Both photos, National Archives

ID collections. (Right) Top and bottom metal die halves for the He 177, showing the detail on the inner surfaces. Even the vertical stabilizer was included in this mold.

lishing the U. S. recognition model program. Navy Lieutenant (later Captain) Donald L. Hubbard was DeFlorez' executive officer and handled all administrative matters and procurement details. Lieutenant Paul E. Garber, who came to the Navy at the outbreak of the war from the Smithsonian Institution where he was the assistant curator for aeronautics, headed the technical aspect. Garber, later a Navy commander and now historian emeritus at the National Air and Space Museum, was well suited for the post, for he was a well-known educator in aviation, a historian, and a model craftsman.

Vast numbers of models were needed, and needed quickly. Hand-carving wood models would have been far too time-consuming, although Ground Training Units put technicians to work doing just that. Each hand-built model reflected the personality of its builder, and the needed standardization was nearly impossible. A better method had to be devised.

Commander DeFlorez called for manufacturers' bids on Navy contracts to produce precise, standardized models. Among the initial bidders were V. Roxor Short of Clinton, Connecticut; Design Center of New York, New York; the L. A. Darling Co. of Coldwater, Michigan; and a display firm organized by George Benchenstein of Cincinnati, Ohio.

Because production methods and materials for creating scale model airplanes by the thousands had yet to be invented (let alone perfected), all four firms received contracts. The story of each contractor is a tale of woe, with problems including labor shortages, unfulfilled Navy contracts, and legal actions, to name but a few.

The search for a suitable material. Finding a suitable material was the

greatest problem. A reinforced plaster compound — the material used to make department store mannequins — was the first to be tried. Plaster proved unsuitable for mass production; the finished planes were apt to be lumpy, and the models shattered if dropped. Since the ID models were to be sent overseas and would have to withstand rough handling in transit (to say nothing of the handling they would get in use), plaster was not the answer.

Next to be tried was a substance resembling hard rubber, which proved unsatisfactory because the wings of the larger models had a tendency to droop. Wood's metal (a low-temperature alloy that melts in hot water) and even cast iron were tried; these produced accurate models if the dies were cut to allow for uneven shrinkage. But weight and scarcity of critical materials ruled out metal for the recognition models.

Experiments were made with paper-mache, which could not reproduce the necessary detail. At least a few of all these types produced, however, were

distributed into the training aid system.

The new process of injection molding cellulose acetate plastic had been pioneered by the Cruver Company of Chicago (now a division of Werner Manufacturing Co.), producers of plastic accessories for automobiles. Cruver's manufacturing methods and the plastic material proved satisfactory for the ID models, and war production — of model planes — became Cruver's top priority. Fine detail could also be achieved with plastic, and at but a fraction of the weight of die-cast metal models the plastic planes could withstand hard use and could be shipped by air without danger of breaking. And, the plastic models had another important advantage: They could be manufactured rapidly. A single mold could produce from 35 to 60 model planes an hour.

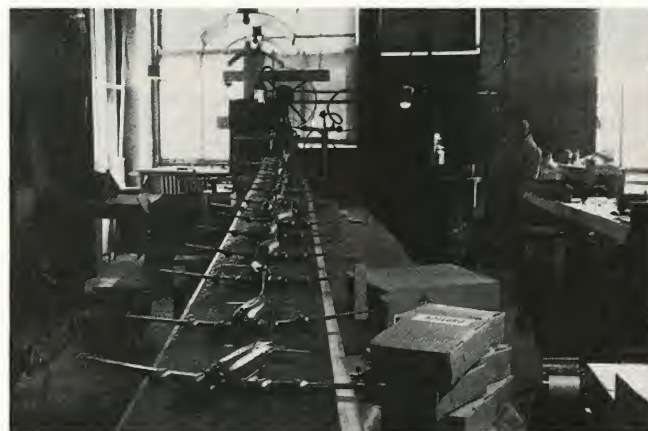
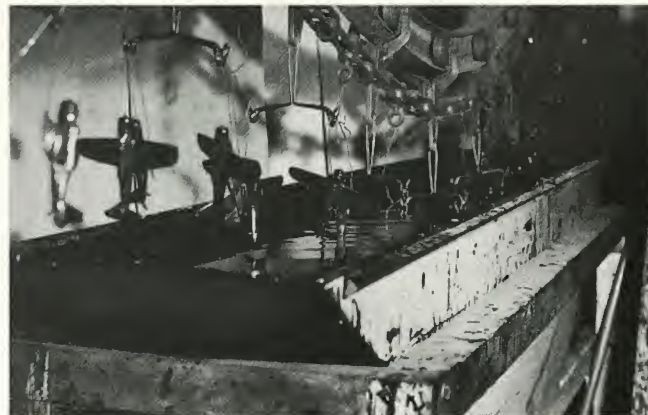
How the ID models were made. An original master model had to be made for each type of plane to be produced. The Comet Engraving Co. and the H & H Specialty Co., both in Chicago, made most of these masters. By now the Army had joined the Navy in the recognition program, and both services furnished silhouettes, photographs, dimensions — and on some occasions mere sketches — of the real aircraft. Skilled model makers, accustomed to working with no more than the clues offered by the photographs and drawings, carved the master models from wood, then sent them to specialists in the Army and Navy for approval. Once accepted, the master went to Cruver where metal dies were made.

To produce the models plastic granules were heated in the molding machine until the plastic melted into a viscous liquid with the consistency of molasses. The molten plastic was then injected into the metal die at a pressure of about 30 tons per square inch — suf-



National Archives

Large models like this C-54 were cast in several major subassemblies. The fuselage halves were hollow, but with thick walls, and the wing and engines were cast as one piece that mated to the fuselage.



Four photos, National Archives

(Top left) Like all the models that had more than one part, these German Go 242 gliders had to be assembled by hand. The most tedious part of assembly was gluing wheels and landing gear into the slots provided for them. (Above left) Held together with wood clamps and wedges, 11 Focke Wulf Fw 200 Condors wait

for their joints to harden. (Top right) A chain conveyor immerses one-piece Vought SB2Us into a tank of flat black lacquer, the final finish for the WWII ID models. (Above right) The Cruver factory took on the appearance of the Douglas assembly plant with this wartime mass-production lineup of C-54s.

ficient to force the slow-flowing material into every crevice and groove of the metal die.

The die then was cooled with water, the cooling time varying with the temperature, humidity, and the size of the model (a fighter took about 45 seconds). Although the models could be made in automatic machines, they were usually taken from the die by hand and immersed in water to cool and harden them further.

The rough models were then cleaned up. The gate through which the plastic entered the die was removed, and parting lines sanded. The models were then completed except for painting. Because large quantities of carbon black were mixed into the plastic, the finished models were shiny, and details were invisible in the reflections. To overcome this problem the planes were given a thin coat of matte lacquer.

The last step was to pack each model individually in a box designed for it. The more-complicated models were fastened to the carton so they would be less likely to shift and be damaged in transit.

Most fighters were molded in one piece, but large or complex aircraft

types had to be molded in several pieces, then assembled. The parts of large planes such as bombers and transports resembled today's shell kit models but with much thicker walls. Planes like the Martin Mariner and the Japanese "Mavis" had struts, floats, and twin tails which had to be assembled by hand. Biplanes, especially those with floats, presented major assembly problems.

Just as in the actual aircraft industry, where manufacturers had to farm out subassemblies to other companies in order to meet production schedules, Cruver subcontracted model aircraft parts. The wing for the Consolidated Coronado four-engine flying boat was cast by one company, the twin tail by another, and Cruver then assembled the model with parts produced in its plant. As the ID program got into full swing several companies such as Design Center, Leominster, and others became involved in model production.

Molded into the bottom of each model was the name or type of aircraft, its nationality, and the issue date. When a modification was made to the mold based on new intelligence information the date was changed (on the postwar

models, a new production date was generally added to the old). Most models also carried a trademark identifying the manufacturer.

How the models were used. Because they were to be used as training aids, most of the models were fairly accurate as to dimensions, shape, and placement of details. Silhouetted against a cloud background and photographed, the models could scarcely be distinguished from the full-size planes in the sky. In fact they were often used for just such photographic purposes in the absence of the real enemy planes.

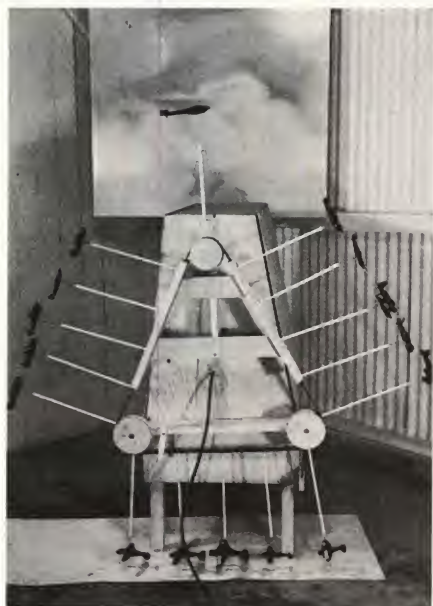
Models had a supreme advantage over the less-interesting silhouette cards used to teach aircraft recognition: The students could handle the models and learn their details. For all practical purposes, they were not studying the models, but actually visualizing the real plane.

Another use of the models was to train gunnery units in estimating range as well as aircraft recognition. Gunners had to know not only the appearance of friendly and enemy planes but also the size of each so they could tell by the size of the plane in the ring gunsight whether it was within range,



Both photos, National Archives

(Right) Collector's items now, when they were produced the recognition models were treated as so many nuts and bolts for the war effort. Before shipment each was individually packaged in a box designed for it. (Above) Large and complex models like this Kawanishi "Mavis" got extra attention, including cardboard cradles and string tiedowns. Because these complicated models broke easily, only a few have survived in collections.



(Above) The Navy developed this device, which was constructed from non-critical material. Here the front cover has been removed, revealing the drive belt with models attached at varying angles. During training the device brought one model at



Both photos, National Archives

a time briefly into view in front of the cloud background. (Right) Often the recognition models were suspended from the ceiling so they could be viewed as if in flight. They were found on all military bases and in many Civil Defense facilities.

how much to lead it, and when to fire. Because the ID models were made to a common scale, size comparisons could be made easily. A model 35 feet from the gunsight, for instance, would look identical to the real plane at a range of just under one-half mile — and would look realistic.

Plastic models of combat aircraft of seven countries were produced for the training program. By the end of the war over 220 types had been issued — a sizable fleet by any standard. The models ranged in size from a 6" wing-

span for average fighters, to 24" for the B-29. Typically, they were displayed by suspending them from ceilings so they could be viewed in a flying attitude.

Schoolboys go to war. At the same time that the plastic model program was begun, Secretary of the Navy Frank Knox requested that high school students start building wood recognition models. It was hoped that these wooden models could be placed into the hands of our armed forces quickly, while the unproven plastic molding process was being readied.

The youth of America needed little prompting. "Building model warplanes for the American government" — to quote an oft-repeated phrase — was something they had a strong desire to do, that "something" being a feeling of directly assisting in the war effort. I know, for I was proud to be one of them.

The idea of school-built models was also that of Commander DeFlorez of the training division of the Navy. The Navy agreed to sponsor the program and defray the cost, and was responsible for selecting aircraft types to be

U. S. PLASTIC RECOGNITION MODELS, WWII ISSUES

U. S. ARMY		U. S. NAVY		BRITISH		GERMAN		JAPANESE	
Aircraft	Date	Aircraft	Date	Aircraft	Date	Aircraft	Date	Aircraft	Date
A-20 Havoc	6-42	Excaltor VS-44	11-44	Albacore	8-42	Arado Ar 196	12-43	(Adam) Nakajima 97	11-42
A-24 Dauntless(SBD)	7-42	F4F-4 Wildcat	5-43	Albermarle	9-44	Blohm & Voss BV 138	5-44	(Ann) Mitsub. T-98	7-42
A-26 Invader	2-44	F4U-1 Corsair	3-43	Barracuda	2-43	Blohm & Voss HA 139	11-42	(Babs) Mitsu T-97	6-42
A-29 Hudson	None	F6F Hellcat	4-43	Beaufighter 1	9-42	Blohm & Voss BV 222	2-44	Betty (G4M1)	9-43
A-30 Baltimore	2-43	GH-1 Nightengale DC	5-43	Beaufighter 2	9-42	DFS 230	8-43	Betty (G4M2)	4-45
A-31 Vengeance	7-42	J2F-4 Duck	12-42	Beaufighter 6	5-44	Dornier Do 17z	9-42	(Claude) Mitsu T-96	6-42
A-31 Vengeance	7-44	JRF OA-9 Goose DC	7-43	Beaufort	9-42	Dornier Do 215	9-42	(Dave) Naka-T-95-NOB	7-42
A-35 Vengeance	4-44	JRS-1 Sikorsky	11-42	Beaufort	None	Dornier Do 217E	8-42	Dinah (Ki. 46)	8-44
AT-17 Bobcat DC	7-43	OS2U (on floats) DC	2-43	Blenheim IV	8-42	Fi 156 Storch	None	Emily (H8K2)	3-45
B-17 Flying Fortress	7-42	OS2U (on wheels) DC	2-43	Boomerang (Aust.) DC	None	Focke Wulf Fw 187	5-42	Francis (P1Y)	3-45
B-24 Liberator	7-42	OS2U-1 (on floats)	7-43	Botha	8-42	Focke Wulf Fw 189	5-42	Frank (Ki. 84)	5-45
B-25 Mitchell	7-42	PBY-5 Catalina	5-43	Defiant	8-42	Focke Wulf Fw 190	7-42	George (N1K1-J)	5-45
B-26 Marauder	None	PB2Y-3 Coronado	4-43	Firefly	2-43	Focke Wulf Fw 190	12-42	Hap (Hamp, Zeke 32)	7-43
B-26 Marauder	10-42	PBM-3 Mariner	6-43	Fulmar	8-42	Focke Wulf 200	3-44	Helen (Ki. 49)	--44
B-29 Superfortress	3-44	PV-1 B-34 Ventura	5-43	Halifax	9-42	Focke Wulf Fw 200K	9-42	(Ida) Mitsu T-98 ALB	6-42
B-29 Superfortress	9-44	PV-2 Harpoon	5-45	Hampden	8-42	Gotha Go 242	7-42	Irving (J1N1) DC	5-45
B-29 Superfortress	None	SB2A-2 Buccaneer	5-43	Hastings	None	Heinkel He 111	9-42	Jack (J2M1)	12-44
B-32 Dominator	12-44	SB2C-1 Helldiver	3-43	Horsa	4-44	Heinkel He 112	7-42	Jake (E13A)	9-44
C-46 Commando	3-43	SB2C-2 Helldiver	2-45	Hotspur	6-43	Heinkel He 113	5-42	Jill (B6N) DC	5-45
C-47 Skytrain	3-43	SB2C-2 (on floats) DC	3-43	Hurricane	8-42	Heinkel He 113	9-42	Judy (D4Y)	3-45
C-47 Skytrain L	5-43	SB2C-12 Helldiver DC	3-43	Lancaster	4-43	Heinkel He 115K	9-42	(Kate) Naka-T-97	6-42
C-54 Skymaster	3-43	SB2U-3 Vindicator	6-43	Lerwick	9-42	Heinkel He 177	9-43	Lily (Ki. 48)	9-43
C-60A Lodestar	3-43	SNJ-2 Texan	7-42	Lysander	7-43	Henschel Hs 126	10-42	(Mary) T-97 ALB	6-42
C-69 Constellation	4-44	SNJ-3 Texan	7-42	Manchester	8-42	Henschel Hs 129	8-44	(Mavis) Kawani. T-97	11-42
C-78 Bobcat	6-44	SO3C-1 Seagull (floats)	3-43	Maryland	2-43	Junkers Ju 52	8-42	Myrt (C6N)	3-45
C-87 Liberator Exp.	3-44	SO3C-2 Seagull (wheels)	3-43	Mosquito	3-43	Junkers Ju 86K	9-42	(Nate) "97 Fighter"	9-42
CG-4A Glider	6-43	TBD-1 Devastator	5-43	Roc	8-42	Junkers Ju 87B	8-42	(Nell) Mitsu T-96	6-42
L-1 Vigilant	3-43	TBF Avenger	7-43	Skua	8-42	Junkers Ju 88	9-42	Nell (G3M)	1-44
L-2 Grasshopper	7-44			Spitfire	8-42	Junkers Ju 90	9-42	Nick (Ki. 45)	8-44
L-4 Grasshopper	2-43			Spitfire	1-44	Junkers Ju 188	7-44	Oscar T-01 (Ki. 43)	9-43
L-5 Sentinel	1-44	ITALIAN		Spitfire 9A	10-44	Messer. Me 109E	7-42	Paul 14, Exp. DC	12-44
P-38 Lightning	7-42	Cantiere Z. 506B	9-42	Spitfire 9B	10-44	Messer. Me 109F	7-42	Pete (F1M2)	6-43
P-39 Airacobra	6-42	Cantiere Z. 1007	9-42	Spitfire 22	7-45	Messer. Me 110	8-42	Rufe (A6M2-N)	8-43
P-40 Warhawk	9-42	Caproni CA. 133	9-42	Stirling	5-42	Messer. Me 210	7-43	(Sally) Mitsu T-97	6-42
P-40 Warhawk	4-44	Fiat BR. 20	6-42	Sunderland	9-42			(Sonia) Mitsub. T-99	7-42
P-43 Lancer	5-43	Fiat CR. 42	9-42	Swordfish	9-42	RUSSIAN		Tojo (Ki. 44)	6-44
P-47 Thunderbolt	9-42	Fiat CR. 42	1-43	Tempest 2	3-45	DB-3F	9-42	Tojo (Ki. 44)	3-45
P-47D Thunderbolt	2-44	Fiat G. 50	8-42	Tempest 5	10-44	DB-3F	4-44	Tony (Ki. 61)	7-44
P-47N Thunderbolt	4-45	Macchi C. 200	8-42	Typhoon	6-43	I-16	None	Tony (Ki. 61)	4-45
P-47 Thunderbolt DC	None	Macchi MC. 202	3-43	Walrus	4-44	I-2	9-42	(Topsy) Mitsu MC-20	10-42
P-51 Mustang	6-42	Piaggio P. 32 bis	9-42	Wellington 2	9-42	I-2	12-43	(Val) Aichi T-99	6-42
P-51D Mustang	4-45	Reggiane Re. 2000	9-42	Wellington 3	9-42	MiG-3	8-42	Val T-99 MK 2	8-43
P-61 Black Widow	2-44	Reggiane Re. 2001	3-43	Whirlwind	8-42	I-18 (MiG-3)	2-43	(Zeke) Mitsubishi 00	9-42
P-63 Kingcobra	5-44	Savoia Marchetti 79	9-42	Whitley	9-42	Pe-2	9-42	Zeke 52 (A6M5) DC	12-44
P-80 Shooting Star	4-45	Savoia Marchetti 81	9-42	York	9-44	SB-3	11-43		
SR-10B Reliant	10-42	Savoia Marchetti 82	4-43			TB-7 DC	4-44	NETHERLANDS	
		Savoia Marchetti 84						Fokker T8W	11-42

built and supplying accurate drawings. J. C. Wright, assistant U. S. commissioner of education, directed the U. S. Office of Education to distribute the plans and instructions through state representatives. The models were built and inspected at local schools, generally within the industrial arts programs, and the Navy provided collection centers and distributed the models to the armed forces.

This was a nationwide program and thousands of youngsters participated. Quotas were assigned to the states and to the District of Columbia, Puerto Rico, Canal Zone, Virgin Islands, and Hawaii. By the end of the 1942 school year hundreds of thousands of models had been delivered, and many participants continued to work through vacation, attended classes at summer school, or made models at home or in community workshops.

A complete set of full-size templates was provided for each aircraft type to be produced. Each plan was illustrated

with a pictorial view, and a description of the plane, names of the parts, and a small three-view drawing were included. Most of these were drawn by Bob Reder of the Comet Model Airplane and Supply Co. (more recently, retired executive vice-president of Monogram Models), and Comet produced wood kits for these ID models for from 25 to 75 cents each. Other companies followed with improved kits, and 1/72 scale became a standard for wood models as well. Strombecker, and later Testor, issued kits with preshaped wood parts for the A-20, B-17E, SBD, B-26, B-29, P-61, and several others.

Today the packets of templates and instructions are collector's items. "A" and "B" series drawing packets consisted of 20 aircraft types of mixed nationality; the "C" series had only ten. Because of enthusiastic support within the schools a request for 300,000 more models was made for the school year beginning in fall 1942. Template packets "D," "E," and "F" (ten types each)

were issued. The program terminated officially at the end of 1943, but continued at some local schools which supplied nearby Army, Navy, and Civil Defense needs. Hawaiian schools supplied models of Japanese aircraft to the Pacific Fleet until August 1944. Plans for the "G" series of models were printed but not distributed; aircraft types were selected for the "H" and "I" series, but the packets were never developed.

Other ID models. Because the 1/72 scale recognition models were space consuming and sometimes awkward to handle, a series of models one-sixth of this size, 1/432 scale, was manufactured. Although tiny, the three-dimensional effect was retained. Several companies made these models, some cast in metal, others injection molded in plastic. The more popular metal issues by Comet Metal Products Co. were painted in appropriate colors instead of flat black. Shortly after the war, Kix cereal offered various sets of four plastic types

U. S. PLASTIC RECOGNITION MODELS, POSTWAR ISSUES

U. S. AIR FORCE			U. S. NAVY			BRITISH			RUSSIAN		
Aircraft	Date	Note	Aircraft	Date	Note	Aircraft	Date	Note	Aircraft	Date	Note
B-26B Invader	4-52	Bla-S	AD-1 Skyraider	2-48	Gra-S	Attacker	8-51	Bla-S	Badger Tu-16 4	6-56	Gra-S
B-29A Superfortress	5-52	Bla-S	AD-3 Skyraider	None	Blu-C	Brittannia 4	10-56	Gra-S	Barge MiG-13 4	7-55	Gra-S
B-36D	10-51	Bla-S	AD-3 Skyraider	10-53	Blu-C	Buccaneer NA.39 S	10-60	Gra-S	Bat Tu-2	6-51	Gra-C
B-45 Tornado	6-51	Gra-C	AD-4 Skyraider	None	Bla-S	Canberra USAF B-57	7-51	Gra-C	Bat Tu-2	8-51	Bla-S
B-45A Tornado	9-51	Bla-S	AD-5W Skyraider	8-51	Bla-S	Canberra USAF B-57	8-51	Bla-S	Beagle I1-28	12-53	Gra-C
B-47B Stratojet	1-52	Gra-S	AD-5W Skyraider	8-57	Gra-C	Comet 4 (S)/4	2-59	Bla-S	Bear Tu-20 (B)/4	11-56	Gra-S
B-47 Stratojet 4	7-51	Gra-C	A2D-1 Skyhawk (B)	11-53	Bla-C	Firefly	8-51	Bla-S	Beast I1-10	6-51	Gra-C
B-50D Superbomber	9-51	Bla-S	A4D-1 Skyhawk (B)	8-57	Gra-C	Gannet H	2-55	Bla-S	Beast I1-10	8-51	Bla-S
RB-52B Stratofortress B/4	6-56	Gra-S	AF-2S AF-2W Guardian	None	Blu-C	Gannet (TS)	2-55	Gra-C	Bison Mi-4 4	8-56	Gra-S
B-58 Hustler (S)	1-59	Gra-S	AF-2S AF-2W Guardian	10-53	Blu-C	Gnat (S)	10-60	Gra-S	Blowlamp I1-40 (B)	3-58	Gra-C
C-47D Skytrain	9-51	Bla-S	A2F-1 Intruder (S)	10-60	Gra-S	Hunter F-1	4-54	Gra-C	Bosun Tu-14	6-55	Gra-C
C-47D Skytrain	2-52	Bla-S	A3D Skywarrior (S)	None	Bla-S	Javelin H	3-55	Gra-C	Buck Pe-2	3-52	Bla-S
C-54G Skymaster	1-51	Gra-S	A3J-1 Vigilante (S)	5-59	Gra-S	Lightning P.1B (S)	11-58	Gra-C	Camel Tu-104 (S)/4	8-57	Gra-S
C-54G Skymaster	1-52	Bla-S	AJ-1 Savage	6-51	Blu-C	Meteor MK.8	6-51	Gra-C	Camp An-8 B/4	10-57	Gra-S
C-82A Packet	4-52	Bla-S	AJ-1 Savage	8-51	Bla-S	Scimitar N.113D S	1-59	Gra-C	Cart Tu-70	9-51	Bla-S
C-97C Stratocruiser	12-51	Bla-S	AM-1 Mauler	7-48	Bla-S	Pembroke MK.1	11-57	Gra-C	Cat An-10 4	9-51	Gra-S
C-119B Flying Boxcar 4	6-54	Gra-S	AM-1 Mauler	8-51	Bla-S	Sea Attacker	6-51	Gra-C	Cleat Tu-114 S/4	None	Gra-S
C-119C Flying Boxcar	12-51	Bla-S	F2H Banshee	7-50	Blu-C	Sea Attacker	6-51	Bla-S	Coach I1-12	9-51	Bla-S
C-123B Provider 4	11-56	Gra-S	F2H Banshee	7-50	Blu-C	Sea Fury	6-51	Gra-C	Coot I1-18	9-51	Bla-S
C-124A Globemaster II	3-52	Bla-S	F2H-1 Banshee	8-51	Blu-C	Sea Fury	8-51	Bla-S	Crate I1-14 (B)/4	None	Gra-S
C-130A Hercules (B)/4	10-57	Gra-S	F2H-3 Banshee T/8	9-54	Blu-C	Sea Hawk	None	Gra-C	Faceplate MiG-21 (B)	11-58	Gra-C
C-131A Samaritan (B)	4-57	Gra-S	F3D Skynight	6-51	Blu-C	Seamew	8-57	Gra-C	Fagot MiG-15	6-51	Gra-C
C-133 Cargo Master 4	3-57	Gra-S	F3D Skynight	8-51	Bla-S	Shackleton 4	7-51	Gra-S	Fagot MiG-15	8-51	Bla-S
F-80C Shooting Star	8-51	Bla-S	F3D-1 Demon	6-54	Gra-C	Swift F-4 H	7-54	Gra-C	Fin La-7	8-51	Bla-S
F-82F Twin Mustang	9-51	Bla-S	F4D-1 Skyray H	7-55	Blu-C	Valiant (B)/4	3-56	Gra-S	Fang La-11	6-51	Bla-S
F-84E Thunderjet	8-51	Bla-S	F4H-1 Phantom II (B)	6-59	Gra-C	Vampire 3	6-51	Gra-C	Fantail La-15 (TS)	3-55	Gra-C
F-84E Thunderjet	10-53	Gra-C	F4U-5 Corsair	2-48	Bla-S	Vampire 5	8-51	Bla-S	Fargo MiG-9	6-51	Gra-S
F-84E Thunderjet	None	Gra-C	F4U-5 Corsair	2-52	Bla-S	Venom	9-51	Bla-S	Fargo MiG-9	6-51	Gra-C
F-84F Thunderstreak	9-51	Bla-S	F6U-1	6-50	Blu-C	Venom	5-55	Gra-C	Fargo MiG-9	8-51	Bla-
F-84F Thunderstreak	12-53	Gra-C	F7F-2 Tigercat	2-48	Bla-S	Victor B/4	1-59	Gra-S	Farmer MiG-19 (B)	10-57	Gra-C
F-86 Sabre	5-51	Gra-C	F7F-2 Tigercat	8-51	Bla-S	Victor 4	6-57	Gra-S	Fishbed B MiG-21 (B)	11-58	Gra-C
F-86D Sabre	9-51	Bla-S	F7U-3 Cutlass	10-52	Blu-C	Viscount	12-56	Gra-S	Fishpot Su-9 (B)	4-59	Gra-C
F-86E Sabre	8-51	Bla-S	F7U-3 Cutlass TS	6-53	Bla-S	Vixen DH-110	8-58	Gra-C	Fitter Su-7	9-57	Gra-
F-89C Scorpion	9-51	Bla-S	F8F-1 Bearcat	2-48	Bla-S	Vulcan B or C/4	1-56	Gra-S	Flashlight Yak-25 (S)	11-57	Gra-C
F-94B Starfire	None	Bla-S	F8F-1 Bearcat	8-51	Bla-S	Wyvern	7-55	Gra-C	Flora Yak-23 TS	7-53	Gra-C
F-94C Starfire	8-51	Bla-S	F8U-1 Crusader B	2-56	Gra-C				Flora Yak-23	7-53	Bla-C
F-94C Starfire	4-54	Gra-C	F9F-3 Panther H & C	6-50	Gra-C				Fresco MiG-17	6-56	Gra-C
F-100 Super Sabre	None	Unk.	F9F-3 Panther H or C	6-50	Blu-C				Fritz La-9	9-51	Bla-S
F-101 Voodoo (B)	9-56	Gra-C	F9F-3 Panther	8-51	Bla-S				La-5	8-51	Bla-S
F-102A Delta Dagger (B)	9-56	Gra-C	F11F-1 Tiger (B)	11-56	Gra-C				Madge Be-6 4	2-58	Gra-S
F-104A Starfighter	12-56	Gra-C	FJ-1 Fury	2-52	Bla-S				MiG-3	8-51	Bla-S
F-105B Thunderchief (S)	2-58	Gra-S	FJ-4 Fury	4-57	Gra-C				Pe-8 Inline engine	12-51	Bla-S
F-106A Delta Dart S	1-61	Gra-S	FJ-4 Fury S	8-57	Gra-C				Pe-8 Radial engine	12-51	Bla-S
KC-135 Stratotanker 4	4-58	Gra-S	P2V Neptune 4	7-48	Bla-S				Yak-3	9-51	Bla-S
L-13A	10-51	Bla-S	P2V-2 Neptune 4	3-52	Bla-S				Yak-9 (Frank)	8-51	Bla-S
L-20A Beaver	7-52	Bla-S	P2V-5 Neptune 4	None	Blu-S				Yak-9D (Frank)	8-51	Bla-S
L-21A Grasshopper	None	Bla-S	P2V-7 Neptune 4	10-57	Gra-C				Yak-15	5-51	Gra-C
L-21A Grasshopper	8-52	Bla-S	P3V-1 Orion (S)/4	8-61	Gra-S				Yak-15	5-51	Bla-S
P-82 Twin Mustang	6-48	Bla-S	P4M-1 Mercator	3-52	Bla-S				Yak-15 Mod.	8-51	Bla-S
P-84 Thunderjet	2-48	Bla-S	P5M-1 Marlin	3-52	Bla-S				Yak-15 Mod.	9-51	Bla-S
SA-16A Albatross	9-51	Bla-S	P5M-1 Marlin 4	None	Blu-S						
			P6M-1 Seamaster 4	6-59	Gra-S						
			PB4Y-2 Privateer 4	5-48	Bla-S						
			PB4Y-2 Privateer	6-48	Bla-S						
			PBM-5A Mariner	7-52	Bla-S						
			R4D-8 Super DC-3 B	1-57	Gra-S						
			S2F-1 Tracker (S)	8-55	Gra-S						
			S2F-3 Tracker (S)	8-60	Gra-S						
			SC-1 Seahawk	2-48	Bla-S						
			UF Albatross T	9-53	Blu-S						
			WF-2 Tracker (S)	2-61	Gra-S						
			WV-2/RC-121 Constella. 4	None	Gra-S						

All models manufactured by Cruver unless marked as follows:
B = Bevelite **L** = Leominster
C = Cruver **S** = SETCO
DC = Design Ctr. **T** = Topping
H = Hawk **TS** = Theatre Spec.
When in parentheses, manufacturer not marked.

for a box top and a few coins. More recently, some of the 1/432 scale models have been reissued for use in game sets.

Another obscure type of recognition model was in the form of cardboard press-outs. These consisted of die-cut silhouettes of the major aircraft components, to be fitted together by the trainee. When assembled, they were accurate 1/72 scale models in plan and side views, but otherwise crude. To while away endless hours aboard ship, GIs assembled thousands of these models; in so doing, recognition features were mentally implanted. Although

it's hard to envision seasoned combat troops pressing toward battle assembling cardboard model airplanes, they did. More than seven million press-out recognition models were produced, yet fewer than a handful, by comparison with the plastic ID models, exist in small collections today. At the time they were as common — and as expendable — as matchbooks.

The postwar program. As WWII ended, so did the need for recognition models. The program was all but abandoned until the the Korean Conflict, when once again the U. S. government ordered molded models. Because this

war was not worldwide, production quantities were relatively low.

The all-black ID models began to give way to a light gray finish, and canopies began to be cast in clear material, greatly adding to their realism. Some models of Navy aircraft were cast in blue plastic. The quality of plastic had improved, and cellulose acetate butyrate was used for many of these later models.

Postwar aircraft progressively increased in size, and so did the models. The B-36, for example, was a gigantic and heavy model — in 1/72 scale, it had a 38" wingspan. Consequently, half



Robert C. Mikesh

One-sixth the size of the standard IDs, these 1/432 scale plastic and metal planes were produced for those remote corners of the world where shipping bigger models would have been a logistic problem. They were small enough to fit in a pocket.



Robert C. Mikesh

A sampling of each of the forms of recognition models. Clockwise from left, a wooden Do 18 resting on the drawings from which it was built, a molded plastic Walrus, a plaster of Paris BT-13 (not issued in any other form), a metal Sea Hornet, a cardboard press-out P-40, and a postwar blue plastic F7U Cutlass with clear canopy, all 1/72 scale. At the bottom is a gray plastic WV-2, produced in 1/144 scale because its wingspan was greater than 99 feet. In the center are metal and plastic 1/432 models of the Sunderland, "Ann," and Fw 189.

size, 1/144 scale, was adopted for aircraft with wingspans in excess of 99'. This size proved more practical for handling, but did have drawbacks in comparing sizes between the two scales.

By 1961 cutbacks in military spending finally brought an end to production of the plastic ID models. An estimated 425 types or variations had been manufactured over a 20-year span; the total number of models produced can only be guessed at something over one million.

The Air Force was the first service to go out of the model airplane business. Without the newer types of planes, the existing models were of little training value and the warehouses were directed to eliminate their stocks. In conjunction with Armed Forces Day in the early 1960s many children entering bases were given a model airplane, and that was the end of the program for the Air Force. By the early 1970s, the Navy, founder of the model program, transferred its dwindling stocks to its auxiliaries for training and disposal as they saw fit.

ID model collections. Models in collections today have come from a variety of sources. A few actually came from military salvage after they had served their purpose. After the war manufacturers' inventories were released to the open market, and many models found their way into hobby shops for purchase by the general public. Prices ranged from \$1.00 to \$8.00 depending on size and complexity; nowadays asking prices are from \$25.00 to \$300.00 — and more. The postwar black issues are the least common, due to the small quantities produced.

There are about 25 large collections of over 250 plastic ID models, and

many more smaller ones. In spite of the large quantities issued and the efforts of collectors to obtain them, several models known to have been produced by the hundreds have disappeared. Most major collectors seem to have reached the saturation point, and relatively few exchanges take place, especially compared to the active trading of the 1960s. Occasionally a collection comes up for sale and the scramble to acquire that long-sought-after piece begins again. Although the rare ones would bring unreasonably high prices, collectors seldom sell models; most would rather trade for an equally rare model that they need.

No official listing of all the plastic models issued was ever compiled. Ray Parker of Dayton, Ohio, a former Air Force procurement manager for the models, has obtained inventories of collections over a 10-year period and the list on pages 50 and 51 is based on his research. Even this list cannot be considered the last word; some models are included because records showed a federal stock number was assigned to them (no assurance that the model was ever produced), other entries are based on a single example in a collection that may be a one-of-a-kind sample never placed in production. With those qualifications, though, the list accounts for nearly all the plastic recognition models produced in the United States.

Note that several entries appear for the same type of aircraft. The most important differences are issue dates; others are the color of the plastic and whether the models had clear or solid canopies. These details varied during the 1950s depending on whether the models were ordered by the Air Force or Navy. Some aircraft designations or

names have changed since the models were produced; the list includes the information molded into the models.

Maintaining ID models. Maintaining a collection of these models is not without its problems. New acquisitions may have been painted by a previous owner. I have successfully removed paint from the WWII models without damaging the plastic by immersing the model in lacquer thinner just long enough to loosen the paint. The paint can then be coaxed off with a stiff-bristled brush and final cleaning done with a cloth dampened with lacquer thinner. This technique will not work on the newer plastic introduced in the postwar gray and some of the postwar black models; these can only be repainted.

Acetone was used to assemble the early plastic models, and is also good for making repairs to broken or separated parts. I've had good luck with epoxy for general repairs on all of the different types of plastics that were used.

Badly scarred models or those having major repairs require repainting. All flat blacks are not the same, and you may have to try several brands before you find one that duplicates the original finish. One aerosol spray that produces a near match to the original finish is GSA-issue Flat Black, federal stock number 8010-00-582-5382. For the gray models, Martin-Senour Paints Metal Primer Gray No. 745-3144, in spray cans, is a close match.

Time is beginning to take its toll on some of the models produced during WWII. Contrary to popular belief, plastic does have a finite life-span based on several variables. Occasionally, collectors are finding models that have become soft and prune-like over isolated spots or in their entirety and that ex-



National Archives

Building wood recognition models for Uncle Sam was a popular and useful pastime for high school students during WWII. Templates and assembly drawings provided by the Navy were distributed by the Office of Education to major U. S. cities.

ude an oily substance. According to Alan Postlewaite, director of the Conservation Analytical Laboratory at the Smithsonian Institution, the only way to retard this deterioration is refrigeration, and even that might have other side effects that would cause further deterioration. Although the deterioration is slow, the rate doubles with each

10 degrees Celsius (18 degrees Fahrenheit) rise in temperature.

Crude as they may be by today's standards, recognition models, be they hand-crafted wood or injection-molded plastic, played a small part in winning the war and an important part in the development of plastic display models as we know them today.

FSM



Three photos, Robert C. Mikesh

Military sponsorship for the plastic model training aid program lasted 20 years, until 1961. Today, many of the over 400 types of aircraft produced are rare and sought-after collector's items, while others remain relatively plentiful.

(Top right) The largest of the WWII models was this six-engine Blohm and Voss BV 222. Fewer than six are known to survive in collections today. (Right) This Sikorsky S-43 (JRS) is one of the few recognition models that has not been duplicated by a modern plastic shell model. When this ID model first appeared on the retail market in 1944 it sold for \$6.00, about one-twentieth of its worth today.



Meet Bob Mikesh

Robert C. Mikesh is curator of aircraft at the Smithsonian's National Air and Space Museum in Washington, D. C. Before joining the museum in 1970, Bob served as a pilot in the U. S. Air Force for 21 years. His military experience includes flying night intruder B-26s with the 17th Bombardment Wing in Korea, and serving as a forward air controller flying O-2As with the 20th Tactical Air Support Squadron in Vietnam. With an accumulation of 9,000 flying hours in many types of aircraft, his high-time aircraft is the Martin B-57 Canberra, flown at various assignments over a 15-year span.

Among Bob's responsibilities at the NASM is ensuring that restored aircraft are complete and exact in every detail, from internal accessories and structural repair to exterior colors and markings.

Now 55, he has been a modeler since age 8. He writes, "My most valuable skills as curator of aircraft have been learned through modelbuilding. Exposure to the many types of aircraft throughout the world, down to exactness in details and colors, can best be learned through a devout interest in modelbuilding."

Bob is a frequent contributor to several aviation magazines; his specialty is Japanese aviation. He has written 12 aviation books, the most recent being *Zero Fighter* (Crown Books) and *The B-57 Canberra at War* (Ian Allen Publishers).



Modeling smoke and fire — an Me 163 in flight

This Komet has a fiery tail



A FRIEND RECENTLY challenged me to build a diorama showing an aircraft as if it were really flying. He further stipulated that any supports for the plane must be invisible. I pondered his challenge for a while and then recognized that my favorite aircraft, the Messerschmitt Me 163 Komet, a rocket-powered point defense interceptor built by the Germans during World War Two, would be an ideal subject. Two features made the Komet especially suitable: Its liquid-fuel motor produced lots of flame, smoke, and steam during takeoff and its main landing gear included a dolly which fell from the plane when the pilot retracted its landing skid.

If I could simulate the exhaust and show the falling dolly, the diorama would certainly imply motion and all supports could be hidden inside the exhaust. I decided to build the Heller 1/72 scale Me 163 kit (No. 237), but used the landing gear parts and pilot figure from the 1/72 scale Airfix Me 163 kit (No. 01063-4) because I felt these were more accurate.

Assembling the kit. I'll mention only those assembly steps where I made modifications in order to represent a plane in flight. On the real Komet a small propeller at the nose turned a generator shaft to provide in-flight electrical power, so I substituted a disk



The basic materials for representing flame and smoke: cotton balls, liquid tempera, and fabric dye. The meat tray at upper right contains cotton balls that have been soaked in several colors of Sargent Poster Dazzlers fluorescent tempera.

The author's diorama shows a Messerschmitt Me 163 just after it has left the ground — the rocket motor is producing maximum thrust and the pilot has just released the takeoff dolly.



Fig. 1. Modifications to the Heller Me 163 are limited to the nose and cockpit areas. A clear plastic disk represents the spinning generator propeller and the pilot figure from an Airfix kit has been given a face mask with oxygen hose.

of clear plastic for the kit propeller, Fig. 1.

I removed the life preserver from the Airfix pilot figure (because the Komet did not operate near water) and added goggles, an oxygen mask, and seat belts. I scratchbuilt a seat, control stick, rudder pedals, and instrument dials, and then vacuum-formed a new canopy, using the kit part as a pattern.

Posing the diorama. Figure 2 shows how the Komet is supported above the diorama base by a brass rod inserted into an aluminum tube inside the tail pipe. This rod also supports the rocket exhaust. A second, smaller brass rod emerges from a hole in the fuselage just behind the landing skid. This hole vented steam and other exhaust gases from a turbine attached to the forward section of the rocket motor. The small brass rod supports the simulated steam and a small wire twisted to it holds the dolly in place.

In Fig. 3 note that the plane is at an angle to the runway center line, that the expansion cracks in the runway are not at right angles to the edges of the mounting board, and that when viewed from the front the plane is tilted a few



Fig. 3. In order to avoid too regular an appearance no element of the diorama is at right angles to the edges of the base and the plane is not at right angles to the expansion cracks in the runway.



Both photos, Collect-Air Photos

These photos of captured Komets show the landing skid and tail wheel strut in their extended and retracted positions. The skid and strut were extended for takeoffs and landings and the wheeled dolly dropped off when the skid was retracted.

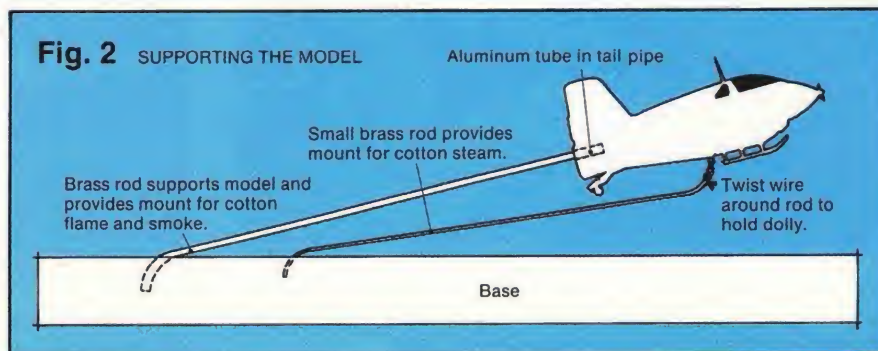
degrees from horizontal. Positioning the plane in this way avoids the staged effect that would result if everything were lined up precisely centered and level.

Flame and smoke. The liquid temperas I use to represent the colors of smoke and flame don't stick to bare brass, so I first painted the brass rods connecting the plane to the base with flat white model enamel, Fig. 4. The white paint provides a base for the temperas and increases their brilliance.

After studying photos and paintings

(especially the Heller box art) of Komets in flight, I concluded that the secret to representing flame and smoke would be to include many color variations. The flame emerging from the tail pipe would be the brightest and it would become progressively darker as it "moved" farther from the pipe, Fig. 5. The smoke around the flame would also become darker.

I decided to represent the flame, smoke, and steam with cotton strands, so I first bought a bag of cotton balls at a drugstore (look in the cosmetics de-



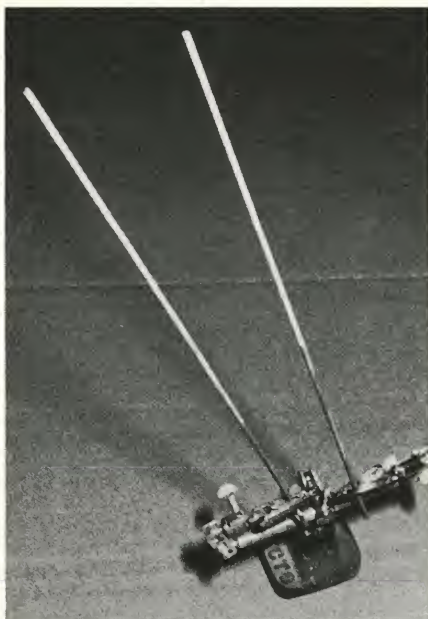


Fig. 4. The brass rods that support the model were thoroughly cleaned and then primed with flat white model enamel so that the liquid tempera to be applied later would adhere to the brass.

partment). I planned to soak the cotton balls in several colors of paint and dye, then pull out strands of colored cotton and glue them to the brass rods.

I wanted a water-soluble, nontoxic

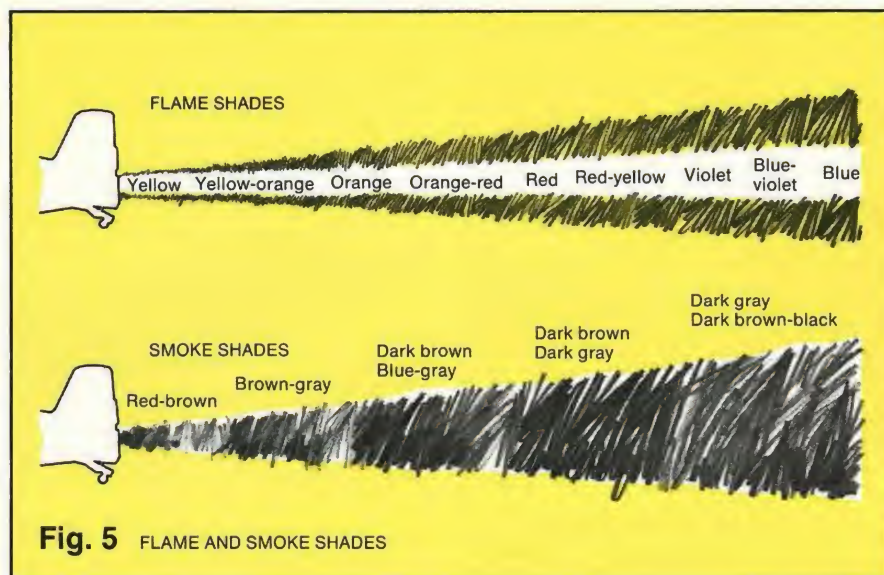


Fig. 5 FLAME AND SMOKE SHADES

paint. A visit to an art supply store convinced me that liquid tempera would do nicely. I bought several jars, choosing colors ranging from light yellow all the way through black and including several fluorescent shades. There are many brands of liquid tempera, including those made by Binney & Smith, Prang, Sargent, and Sax — I used Sargent liquid tempera and Sargent "Poster Dazzlers" fluorescents — other brands should work just as well.

The temperas would take care of most shades but I also bought packages of Rit fabric dye in Cocoa Brown, Black, and Royal Blue. I added water to the powdered dye per Rit's instructions and stored the dye in extra paint bottles.

To prepare the hottest yellow flame closest to the tail pipe, I poured a small amount of fluorescent yellow tempera into a foam plastic meat tray and rolled a dampened cotton ball in the yellow



Fig. 6. A paint-soaked cotton ball looks like this before the strands are pulled apart and fluffed.



Fig. 7. Some of the paint will fall off the cotton as it is fluffed, but most of the color will remain.



Fig. 8. Carl then attaches strands of colored cotton to the brass rod with diluted white glue. The brightest colors, representing the hottest flames, will be closest to the tail pipe.



Fig. 9. The strands are twisted and bunched to suggest the turbulent, roiling flames produced by the Me 163's motor.



Fig. 10. Carl now applies a little white glue to the flame and adds the darker layers of smoke that will surround the flame.



Fig. 11. Smoke surrounds the flame and the rod will now be inserted into an aluminum tube inside the tail pipe, firmly yet invisibly supporting the model above the runway.

paint, saturating the cotton. I left the ball in the tray, turning it several times (as if I were grilling a hamburger) while it dried. Turning the ball helps distribute the color evenly and prevents the ball from sticking to the tray. I repeated the process with each of the other temperas and dyes, ending up with cotton balls in about 14 colors ranging from yellow to black.

I then painted the larger brass rod the colors shown in Fig. 5 and began to attach the flame-colored cotton to the rod, Figs. 6, 7, 8, and 9. I first pulled the balls apart, fluffing the fibers, then attached the cotton to the tube with thinned white glue. That took care of the flame; the darker smoke is simply red-brown to black cotton glued over the flame-colored cotton, Figs. 10 and 11.

Steam. In addition to the main rocket nozzle, the Me 163 emitted steam and smoke from two other vents: a small

hole just below the tail pipe and a larger hole behind the landing skid, Fig. 12. In both cases, these gases were cooler and cleaner than the exhaust from the tail pipe, so I represented them with cotton very lightly tinted with thinned black paints and dyes — the cotton remains almost pure white. I glued the cotton onto the small brass rod I mentioned earlier, Fig. 2. For the steam below the tail pipe, I twisted a little unpainted cotton until it was several inches long and about the diameter of a straight pin, then glued the cotton in place.

I wrapped a short piece of wire around the small brass rod about an inch below the plane, painted the wire white, and wrapped it around the dolly, positioning the dolly so that the wire is hidden by the cotton.

My friend conceded that the completed diorama satisfied his require-



Fig. 12. Carl represents steam with fluffed cotton slightly tinted with diluted black paint and fabric dyes.

ments — the Komet really does seem to be taking off and its supports are invisible. Although my Komet is a small model (it's less than 3 1/4" long), I'm convinced that the same techniques could be used to represent flame, smoke, and steam in any size or scale. **FSM**



Meet Carl McLaughlin

Carl McLaughlin, 37, lives in Winfield, Alabama, where he's a schoolteacher and member of the Alabama Army National Guard. An avid modeler for more than 25 years, Carl belongs to the Birmingham chapter of IPMS and has a collection of more than 500 models in his home. Several of his 1/72 scale Me 163 models are displayed at the Air Force Museum in Dayton, Ohio.



FINESCALE MODELER: Burr Angle

The Me 163 diorama conveys a sense of motion whether viewed from the front, top, or side. The same materials can be used to model flame, smoke, and steam in any scale.

Plastics Plastics Plastics

SCALE MODELS

LTD.

1048 EAST 162ND ST. (RT. 6)
SOUTH HOLLAND, ILLINOIS 60473

Catalog and
six bimonthly updates
\$3.00 (Refundable)

VISA MC AMEX ACCEPTED

IN OHIO...

...Adult modelers
shop with us.

ARMOR • AIRCRAFT
DECALS • BOOKS
TOOLS • MINIATURES
FOREIGN MAGAZINES



STRETE HOBBIES

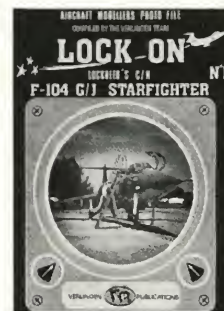


3655 Sullivant St., Columbus, OH 43228

FSM BOOK BRIEFS

FINESCALE MODELER invites publishers to submit review copies of books and magazines related to modelbuilding. Send all material to FSM Book Briefs, FINESCALE MODELER, 1027 North Seventh Street Milwaukee, WI 53233.

BY BURR ANGLE



The Lockheed C/N F-104 G/J Starfighter

Francois Verlinden, Hans Wilms, and Willy Peeters, who call themselves the Verlinden Team, have published the first in a series of "Lock On" books. These volumes will concentrate on providing modelers with reference information for detailing models of a particular modern aircraft.

This first volume is a 64-page, 7 1/4" x 8 5/8", soft-cover book containing 184 color photos of NATO F-104 and TF-104 Starfighters and Starfighter details. The photos, most by

the MODEL WORKS

We feature what we feel are
the finest lines of scale models.

We do not have a catalog
available, write for specific
items desired. Include SSAE.

- Wide range of car kits-including Tamiya and 1/43 metal
- Military - Armor & Aircraft
- 1/700 Waterline Ships & Dioramas
- Reference Books, Periodicals and Photos
- Paints, Decals, Tools, and Scratch Builder Materials

1655 E. COLORADO BLVD.

PASADENA, CALIFORNIA 91106

818-793-6061

1001 UNIQUE WOOD SHAPES

IN PRECISION SCALE BASSWOODS

Today, basswoods are preferred over balsa more and more by the serious hobbyist, prototype model maker, dioramist, architect, etc., because of structural strength, ability to hold detail, ease of working and longevity. From structural shapes, doll house mouldings, carving blocks, decking, strips and sheets to hardware and complete model railroad kits, Northeastern offers a complete line of quality, precision scale products. Satisfaction guaranteed or your money back.

For fastest action—mail this coupon today!
OK Northeastern—rush me your catalog and prices today.

Name _____

Firm _____

Field of interest _____

Street _____ City _____

State _____ Zip _____

SEE YOUR
LOCAL DEALER
OR WRITE
FOR OUR
CATALOG
AND
PRICES
TODAY!



NORTHEASTERN
SCALE MODELS INC.

P.O. Box 425FSM
Methuen, MA 01844
(617) 688-6019

PASTEL WEATHERING KIT



The six basic earth tone pastels in our weathering kit will bring life and texture to your models.

Follow the recommendations of the masters of modeling. Pastel weathering is an easy and effective way to make your models look "used," realistic, and "alive."

See your dealer — \$7.95
Order direct \$8.50 inc. postage.

**Imported
Specialties**
3655 Sullivant Ave.
Columbus, Ohio 43228
U.S.A.

the authors, are sharp and clearly printed and show parts of the aircraft seldom seen in other publications. For example, one picture reveals the interior of the afterburner can of a J79 engine on an Italian F-104S. In addition to the photos, several pages of drawings show cockpit interior parts and ejection seat details. Foldouts contain six-view drawings of the F-104 in 1/72 and 1/48 scale by Willy Peeters (1/32 scale drawings are available separately).

The text is limited to brief kit reviews — the authors claim that information on the plane's development, specifications, and operations is readily available elsewhere and that they've excluded such material to make room for the color photos.

The book is published by Verlinden Productions, Berlaarsestraat 34-36, 2500 Lier, Belgium. FSM has asked Verlinden if his firm has an agent in North America; in the meantime those interested should request ordering information directly from Verlinden Productions.

Victory over the Wind

This 6" x 9", 142-page, hard-cover book by Don Berliner is a history of the planes and pilots that have established Absolute World Air Speed Records, ranging from Alberto Santos-Dumont's 25.66 mph on November 12, 1906, through Capt. Eldon Joersz' present record of 2,193.64 mph on July 27, 1976 (in an SR-71A, which may have been able to fly 400 mph faster). There are 40 black-and-white photos, but most of the book describes high-speed aircraft and the historical context of record-setting flights — the author is an official of the National Aeronautic Asso-

Battleline Miniatures

1:35 SCALE WHITE METAL MINIATURES
M113/M132A1 "ZIPPO" FLAME THROWER TURRET.

- 20-US GI FIRING LAW ROCKET. \$5.00
- 21 - VC RPD MG GUNNER. \$5.00
- 22 - US M-60MG GUNNER (M113 ACAV, M151 MUTT, ETC.). \$5.00
- 23 - VC 12.7mm DSHK w/ GUNNER. \$5.50
- 24 - VC 122mm ROCKET w/ GUNNER. \$5.50



\$5.50



VIETNAM
FIGURE
CATALOGUE -
\$1.50

PLEASE ADD 10%
POSTAGE ON ALL
ORDERS.

CHECK OR M.O.
PAYABLE TO:

GATEWAY HOBBIES
62 WEST 38th ST.
N.Y.C., N.Y. 10018
(212) 221-0855

VACUFORMS



B-50D

WHITE EAGLE

1/72 BOEING B-50D \$21.95

1/72 BOEING C-97

STRATOFREIGHTER \$22.95

SHEET STYRENE-WHITE

24 (.020) INDIVIDUAL PRE-SCRIBED PIECES
FOR MATTEL VAC-U-FORM \$3.00

SHEET STYRENE-WHITE

4 (.020), 2 (.040) - 6 5/8" x 7 5/8"

SHEETS \$3.00

AIRMODEL, GRIFFIN, RAREPLANES, ETC...

FOR CATALOG SHEETS, SEND SSAE.

POSTAGE & HANDLING

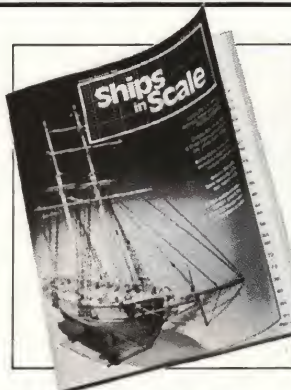
UP TO \$20.00..... \$2.00

\$20.00 & UP..... \$2.50

MICHIGAN RESIDENTS ADD 4% SALES TAX



WHITE EAGLE VACU-FORM
P.O. BOX 1834
DEARBORN, MICHIGAN 48121



CLIMB ABOARD THE GREAT NEW
SHIP MODELING MAGAZINE...

Ships in Scale

BARGAIN
INTRODUCTORY
RATE

NO RISK GUARANTEE: If not completely satisfied with your first issue, you may cancel your subscription and we'll refund your entire purchase price.

MODEL EXPO PUBLICATIONS, INC.

23 Just Road
Fairfield, NJ 07007

If you've ever built a model ship before—or even thought about building one—this magazine is for you! *Ships in Scale* is the magazine for hobbyists, would-be hobbyists, or just those who love to putter about, dream about, or read about ships. *Ships in Scale* covers every aspect of ship modeling—power and sail, plastic and wood, scratch building and kit, even radio control. You'll find detailed articles, pages of plans, fantastic photographs, historic—and nostalgic—journeys into the past, plus news and notes of nautical events.

**Subscribe now and save \$3 off the newsstand price.
Enjoy one full year (6 issues) for just \$15.**

MAIL THIS COUPON TODAY!

YES! Please enter my subscription to SHIPS IN SCALE for the period checked.

☐ 1 YEAR (6 issues) \$15. (Regular newsstand price is \$18/year!)

☐ 2 YEARS (12 issues) \$28. (Lock in bigger savings for 2 full years!)

☐ My check or money order is enclosed.

☐ Charge my credit card.

☐ Visa

☐ MasterCard

☐ American Express

Card No. _____

Exp. Date _____

Signature _____

Name _____

Address _____

City _____

State _____

Zip _____

MODEL EXPO PUBLICATIONS, INC.

23 Just Road, Fairfield, NJ 07007

Please allow up to 8 weeks for delivery of your first issue.

FSM-54A

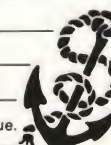




Photo by
E. Mason

DECAL SHEET #48-2

BEAUTIFUL DECALS!

BARE-METAL brand decals are extremely accurate. The artwork is superb and colors match FS595. They are thin and lay down like paint. They cost a little more than ordinary decals but they are worth it.

BARE-METAL FOIL is "the answer to a modelers prayers" when you want that **REALISTIC** metal surface. It looks like metal because it **is** metal. Easy to use, adhesive backed. All detail shows thru.

6 x 11 SHEET \$3.50

Beautiful decals for that finishing touch.

#72-1 F-106A, 191st FIG, MICHIGAN ANG.....	\$3.00	#48-2 RF84F/K, 191TRG and 127TRG, Mich. ANG	\$3.50
#72-2 U.S. National Insignia, WW II.....	\$2.00	#48-3 F4E, 57th FIS, Keflavik, Iceland.....	\$3.50
#72-3 U.S. National Insignia, Present Day.....	\$2.00	#48-4 F15's 48th FIS, Langley AFB, Virginia and	
#72-4 F4E, 57th FIS, Keflavik, Iceland.....	\$3.00	555th TFS, Luke AFB, Arizona.....	\$3.50
#72-5 F15's, 48th FIS, Langley AFB, Virginia and			
555th TFS, Luke AFB, Arizona.....	\$3.00		
#72-6 F106A, 101st FIS, Mass., ANG.....	\$3.50		
#72-7 F106A, 177th FIG, New Jersey, ANG.....	\$3.50		
#48-1 F-4C, 191st FIG, MICHIGAN ANG.....	\$3.50		

Bare-Metal Plastic Polish - 1 oz. bottle..... \$2.00

POSTAGE AND HANDLING

POSTAGE AND HANDLING	
Decals35¢
Bare-Metal 1st Sheet60¢ Each Additional..... .30¢
Polish (separate postage required) 1st Bottle60¢ Each Additional30¢

—DEALER INQUIRIES INVITED—

BARE-METAL FOIL COMPANY
P.O. Box 82
Farmington, Michigan 48024

S
U
P
P
O
R
T
I
P
M
S



Model By: Malcolm Laird

1/48th Scale
B-57 'CANBERRA'

Photo: M Laird

S
U
P
P
O
R
T
I
P
M
S

FALCON

VACUFORMS

N (1/48) B-57 "Canberra".....	\$24.95	N
E (1/72) TRIPLE Conversion #2.....	\$12.95	E
W (C-1 Trader • EP-3E Orion • 3/4 Banshee)		W

(1/48) Hawker "Sea Fury".....	\$13.95
(1/48) Northrop F-89D "Scorpion".....	\$19.95
(1/48) Lavochkin La 5FN.....	\$12.95
(1/48) Focke-Wulf Ta 152H.....	\$12.95
(1/48) Seafire FR.47.....	\$12.95
(1/48) Martin Baker M.B.5.....	\$12.95
(1/48) Be2c.....	\$12.95
(1/32) Fokker D VIII.....	\$12.95
(1/48) Focke-Wulf Fw 190D (conversion).....	\$ 6.95
(1/48) Spitfire XIV (conversion).....	\$ 6.95
(1/72) Martin Baker M.B.5.....	\$ 8.95
(1/72) Mistel 2 (long nose).....	\$ 2.95
(1/72) TRIPLE conversion #1.....	\$12.95
(F-100F • TA-7C • RF-8)	

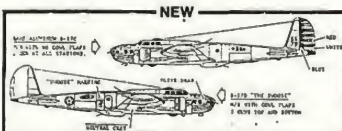
WAR EAGLE

CHECK or MONEY ORDERS ONLY.
ALL CONTINENTAL U.S. orders shipped UPS POSTPAID.
© 1984 War Eagle, Inc.

are available at better
hobby shops, or direct from

WAR EAGLE™
• INCORPORATED •

P.O. Box 255 • New Baltimore, Michigan 48047 • (313) 725-7345



KAE-4 KOSTER B-17C/D \$9.95
KOSTER AERONAUTICAL
(ALL KITS NOW AVAILABLE)

COMING SOON
Falcon Injection Molded Kits

(72-1) F3D "Skynight" (48-1) Heinkel HE 162

carries KOSTER, AEROCUB & BARE METAL. Illustrated Catalogue \$2.00
also completed REPLICAS - custom built to your specifications -
from available INJECTION molded or VACUFORM kits.
(write WAR EAGLE, Inc. for more information)

DEALER INQUIRIES INVITED—ALL CORRESPONDENCE SHOULD
BE ADDRESSED TO THE ABOVE P.O. BOX.



ciation, which represents the Federation
Aeronautique Internationale (FAI) in the
U. S., so is well versed on the subject.

The book is published by Van Nostrand
Reinhold Company, Inc., 135 West 50th
Street, New York, NY 10020; the price is
\$15.50.

Modern Naval Aviation and Aircraft Carriers

The latest Arco Illustrated Guide, this
160-page, 4 1/2" x 8 3/4", hard-cover book by
John Jordan contains 131 photos (most in
color) and 55 drawings and paintings. The

Styrene... Fast, Accurate, Versatile

Use precut styrene strips and
sheets on your next project.

evergreen
scale models

Send SASE to Dept. 136 for info
1414-127th Pl. N.E., Suite 107
Bellevue, Washington 98005

APC HOBBIES 11A FENCE RD EARLYSVILLE, VA. 22936

PEGASUS 1/72

Fairey Fox	12.50
Gloster Gaunt-	
let	9.00
Gamecock	9.00
7F1 Snipe	9.00

EXACT VAC 1/48

Rita I-16	6.95
P40N	6.95
Yak 3	6.95
Grum. Duck	8.75

HUMBROL 1/72

72009 T4 Harrier	4.90
------------------	------

SUPERMODEL 1/72

Fiat G55	5.50
MC202	5.50
MC205	5.50
Re2000	5.50
Fiat CR32	5.50
Re2001	5.50

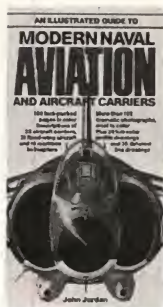
RARE PLANE 1/72

A2D-1 Sky-	
shark	8.00
F3D Skynight	8.00
Argentine	
Fucara	9.00
Gotha G IV	9.00

POSTAGE \$1.50 per order

catalog \$1.00

M C/VISA
PHONE 804-9732705



text discusses 23 contemporary ships or ship classes and 50 shipborne or land-based naval aircraft, providing brief tables of statistics and concise histories of each vessel or type of airplane or helicopter.

It is published in the U. S. by Arco Publishing, Inc., 219 Park Avenue South, New York, NY 10003; the price is \$9.95.



F-84 Thunderjet in Action

Larry Davis and David Menard have produced this 50-page, horizontal-format, soft-

Mail Order Only



SCRATCH-BUILDING SUPER-DETAILING SUPPLIES & ACCESSORIES WEATHERING & DIORAMA MATERIAL FEATURING

☆
Nuts, Bolts & Fittings

☆
Ropes, Chains & Cables

☆
Styrene Sheet, Rod & Strip

☆
Basswood, Balsa, Plywoods

☆
Camouflage Nettings

☆
Screening

☆
Terrain

☆
Spare Parts

☆
★ARMOR★SHIPS★

★AIRCRAFT★RAILROAD★

★FIGURES★VEHICLES★

We ship anywhere in the world
New Catalog ★ \$2.00

METROPOLITAN MODEL
SUPPLY COMPANY

24-16 Steinway Street
Astoria, NY 11103 Suite 583

D & J HOBBY

Located in

San Francisco-San Jose area

D & J Hobby & Crafts
96 San Tomas Aquino Road
Campbell, CA 95008
Ph. (408) 379-1696



COME IN AND VISIT OUR NEW LARGER STORE

WE CARRY
COMPLETE
LINES OF:

We have no
catalog, but we
do sell mail
order. Send SSAE
for your specific
inquiries.

- ★ Imported Aircraft, Ships and Armor Kits
- ★ Fantasy Miniatures & Games
- ★ Minitanks & GHQ Micro Armor
- ★ Humbrol—Polly S—Floquil
- ★ Paasche Airbrushes & Parts
- ★ Scratchbuilding Supplies
- ★ Wargames and Miniatures
- ★ Decals, Magazines and Books

Open: Mon-Thurs-Fri 10:30-9

Tues-Wed 10:30-6

Sat 10-5:30

Sun 12-5:30



Hobby Paint Shaker

- NO MESS
- NO WASTED PAINT
- FULL COLOR MIX
- 5000 CYCLES PER MINUTE

Mixes your paint better than you can with a stick or handshaking. Accommodates 1/4 oz., 1/3 oz., 1/2 oz., 5/8 oz., and 1 oz. size bottles. This product is guaranteed one year.

Available at your favorite hobby store now.

#410 Battery operated Hobby Paint Shaker.

(4) D-Cell batteries not included. \$19.95 list

#411 110 Volt A/C Powered Hobby Paint Shaker

\$29.95 list

robart

310 N. 5TH ST. • ST. CHARLES IL 60174

...when In
San Diego, visit
Plastic Military Models
 16769 Bernardo Center Drive
 San Diego, California 92128
1-619-451-3591
FEATURING
 a full line of
vacuforms & decals
 Aircraft, Armor, Ships, Books, Paints,
 and Accessories!
CALL US & FIND OUT WHAT OUR
SPECIAL SALE ITEM IS THIS WEEK!

THE CARD MODEL — Old fashioned? Yes, But a creative anachronism. The basic technique, formed and folded paper card stock, is hundreds, maybe thousands of years old. But it also mirrors space age fabricating processes. And card modeling will introduce you to the world of scratch-building in many materials. For example, build one of our kits in card stock. Then, using supplied patterns, build it again in



sheet metal, plastic or plywood. Next, design your own patterns for any static display or working model.

We offer the GA-36 (\$3.95), XG-70 (\$5.95), P-66 (\$5.50), Hughes Racer (\$4.95), all ppd. Our complete, illustrated catalog with plans and latest releases, 25c.

META MODEL
 P.O. BOX 221
 BATAVIA, N.Y.
 14020

cover, 8 1/4" x 11" book on the Republic F-84 series of fighter-bombers, the mainstay of the USAF and several other NATO air forces in the 1950s and 1960s. There are 87 black-and-white photos of all major variants of the F-84 and three-view drawings of the F-84F, G, and RF-84F. The F-84F and RF-84F were sweptwing planes, representing major improvements over earlier models; the F-84F was called the Thunderstreak, the RF-84F was the Thunderflash. Two pages of color paintings by Don Greer show aircraft markings and color schemes.

The text includes a brief history of each variant and an account of F-84 deployments in Korea from December 1950 until the armistice of July 1953.

The book is published by Squadron/Signal Publications, Inc., 1115 Crowley Drive, Carrollton, TX 75011; the price is \$4.95.

MICHIANA

— YOUR SEARCH
IS OVER —

HOBBYLAND

343 Lincolnway West
 South Bend, Indiana 46601
 219-287-0180

— For all your hobby needs —

Armor - Aircraft - Ships
 Decals - Tools - Books & Mag.

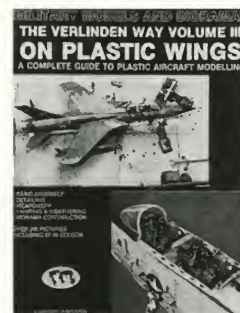
STYRENE RODDING

USES: PIPING, CONTROL LINES, BRACES, ETC.

DIA	PROTOTYPE SIZES		
	1:72	1:48	1:35
.010"	3/4"	1 1/2"	3/8"
.020"	1 1/2"	1	3/4"
.030"	2 1/8"	1 1/2"	1
.040"	2 7/8"	2	1 3/8"
.050"	3 5/8"	2 3/8"	1 3/4"

12" pieces, 12/pkg
 available at your dealer or direct
 send 75¢ and a business size SSAE
 for our "Augmentables" flyer

GRANDT LINE PRODUCTS, INC.
 1040B Shary Court, Concord CA 94518



The Verlinden Way, Volume III

This 96-page, 6 1/4" x 7 7/8", soft-cover book by Francois Verlinden, a well-known Belgian professional modeler, is a how-to guide

**Discover challenging modelbuilding projects — and
 useful scale modeling tips — in these FSM back issues!**

<p>FALL 1982</p> <p>Build a cast-metal car kit Detailing WWII jeeps Five-model display 1/32 "The Foz Seller" Weathering trucks 1/48 Supermarine Walrus</p>	<p>WINTER 1982</p> <p>1/35 Soviet T-60 tank Acrylic display cases Race car cockpits Mountain man figure Build your first diorama Spitfire Mk. IA P9306 data</p>	<p>SPRING 1983</p> <p>4' x 8' 1/35 diorama 1/72 B-29 Superfortress Camouflage netting Modeling four Tigercats StarClipper spacecraft Realistic lights/lenses</p>	<p>SUMMER 1983</p> <p>The perfect filler putty 1/35 Panzer IV Ausf. B Attack lizard! 1/18 museum diorama Aerodyne cab-over 1/72 Boeing B-50</p>	<p>FALL 1983</p> <p>M48A3 moving pillbox Testors F-4E Phantom II Aircraft cockpit details 1/25 scratchbuilt truck Superdetailing armor Solve casting problems</p>	<p>JAN/FEB 1984</p> <p>Vultee P-66 in paper Water with acrylic gel 1/35 LVT(R)-X1 Dealing with decals Realistic model shots Precision modeling tools</p>	<p>MAR/APR 1984</p> <p>Detailing with paint Paint your first figure Accurate PT-109 Build a spray booth Kit collecting Bare-metal finishing</p>
--	---	--	---	---	--	---

DEPT. 5855, FINESCALE MODELER, 1027 N. Seventh St., Milwaukee, WI 53233

Enclosed is my payment of \$_____ for the FSM back copies I've marked below at \$2.25 each. Add \$1 per order for postage and handling. Wisconsin residents add 5 per cent sales tax. Back copies available only in U. S.

- | | |
|--------------------------------------|---------------------------------------|
| <input type="checkbox"/> FALL 1982 | <input type="checkbox"/> FALL 1983 |
| <input type="checkbox"/> WINTER 1982 | <input type="checkbox"/> JAN/FEB 1984 |
| <input type="checkbox"/> SPRING 1983 | <input type="checkbox"/> MAR/APR 1984 |
| <input type="checkbox"/> SUMMER 1983 | |

Name _____
 Street _____
 City _____
 State, Zip _____
☐ MASTERCARD
 Charge to: ☐ VISA Exp. Date _____
 Card Number _____
 Signature _____

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet. Prices subject to change. © KALMBACH PUBLISHING CO.

for building plastic aircraft models. There are sections on basic assembly techniques and on decaling, painting, and weathering. The text (in English) is accompanied by 113 photos (57 in color) and 27 drawings.

The book's high point is a series of color photos of 9 aircraft dioramas, including a spectacular scene by Michel Suplis showing an F-16 during final assembly on the General Dynamics production line.

It is published by Verlinden Productions.

On the Hawser

Steven Lang and Peter H. Spectre have produced a handsome album that combines text and photos to provide an interesting history of all types of nineteenth- and twentieth-century tugboats. The 506-page, hard-cover, 8½" x 10", horizontal-format book is arranged so that a black-and-white photo (there are more than 500) of a tug appears on almost every right-hand page and the opposite page contains several paragraphs of text that explain the picture.

Ship-handling harbor tugs receive the

ON THE HAWSER
A Tugboat Album

by Steven Lang
and Peter H. Spectre



most attention but there are also photos of many other types, including the large vessels used to move equipment to offshore oil fields.

It is published by Down East Books, Camden, ME 04843; the price is \$30.00.

The British Military, 1803 - 1815

This 7" x 9¾", 120-page, soft-cover book by S. J. Park and G. F. Nafziger is an overview of the British Army's structure during the Peninsular War against France

SCRATCH BUILDING SUPPLIES

Dry Transfer Lettering

Catalog No. 4 - \$2.00



Clover House

Post Office Box 62D
Sebastopol, California 95472

LAKER "TRUJILLO"

Detailed Scale Model

for information write

HERITAGE SHIPBUILDERS

Box 494 • Lathrup Village, Mich. 48076

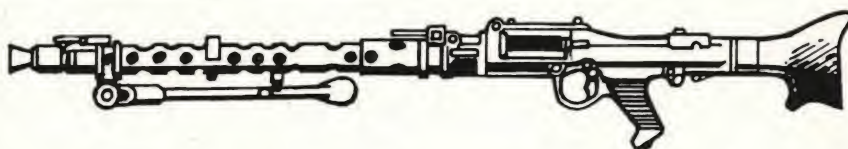


17 N. 4TH ST.

EMMAUS, PA. 18049

MODELS

VAC FORMS FOR THE
AVERAGE MODELER



Take a hard look

THESE ARE, IN FACT, REMARKABLE MINIATURES

1/32-1/35 SCALE

MILITARY HARDWARE IN BRASS

FOR MORE INFORMATION, send a SELF ADDRESSES STAMPED ENVELOPE to receive our complete illustrated Catalog Sheet.

CREATED FOR THE PROFESSIONAL MODELER, AND THOSE WHO WANT TO BE.

COMBAT SERIES

Dept. F, P.O. BOX 475 PINEDALE, CALIFORNIA 93650

1930's DIMESTORE Vehicles & Soldiers

MANUFACTURED FROM
ORIGINAL MOLDS
HOLLOW CAST IN A SPECIAL
WHITE METAL LEAD ALLOY



Now, the American Dimestore Figures that were so popular years ago are once again available for your collecting pleasure. A full line of Vintage Autos & Trucks with white rubber tires, 3¼" WWI Doughboys, Santas, Ice Skaters & Skiers, repair & replacement parts. All manufactured & sold direct to Modelers & Collectors.

Send for your catalog today!



FSM

VINTAGE CASTINGS, INC.

127 - 74th Street North Bergen, N.J. 07047
(201) 861-2979

Enclosed is \$1.00, please send me the NEW 10 pg. Vintage Castings' 1983 Dimestore Catalog by First Class Mail.

Name _____

Address _____

City, State, Zip _____

48 LINES OF
HOBBY PRODUCTS
SOME ARE . . .

FREE

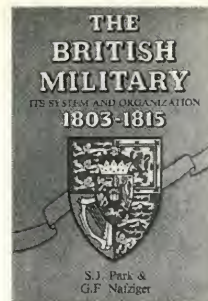
SEND LONG SASE (40¢ stamps)
FOR INFORMATION PACKET TO:
BARGAINS GALORE
BOX 3151 LA HABRA, CA 90631

MILITARY HISTORY



ON VIDEOCASSETTES

WWII German newsreels of the great battles, rare Allied documentaries, Korea, Vietnam and contemporary Soviet Army films reproduced from original source materials. Over 200 titles. Send \$1.00 (refundable) for illustrated catalog.
INTERNATIONAL HISTORIC FILMS
Box 29035, Chicago, IL 60629



in Spain and Portugal from 1808 through 1813, as well as the years immediately preceding and following. The text concentrates on describing how troops in the field were organized and how they fought, but it is not a history of army operations.

The book includes organizational tables for regiments, battalions, and companies and discusses all major units of the British Army — cavalry, infantry, marines, artillery, engineers, and various service corps.

One of the authors' conclusions is that British soldiers of the period were probably better trained than conscripted troops of the continental powers in part because many British soldiers served a year or more in the militia before joining the army.

It is published by Rafm Co., Inc., 19 Concession Street, Cambridge, ON, Canada N1R 2G6; the price is U. S. \$14.00 plus \$2.00 postage.

Historex Catalog

Historex is a French manufacturer of plastic 54 mm figures and military equipment of the Napoleonic period. The firm's English distributor, Historex Agents, 3 Castle Street, Dover, Kent CT16 1QJ, has recently published a 120-page, 8 1/4" x 11 1/4", soft-cover catalog listing all Historex kits and spare parts. In addition, the catalog contains detailed essays on how to build plastic figures of soldiers and horses, as well as tips on diorama construction. There are 72 color photos of completed figures and di-

THE QUARTERMASTER



P.O. DRAWER Y ★ Dept. F
ST. JOSEPH, ILLINOIS 61873

KITS, FIGURES, GAMES, AND SUPPLIES

OVER 50 MANUFACTURERS

Aero Pubs
Avalon Hill
Barton
Deauville
G.H.Q.
G.D.W.
Historex

Humbrol
Italaerei
Minicraft
Micro Scale
New Hope Design

Osprey
Phoenix
Ral Partha
Superior
Tamiya
T.S.R.
X-Acto

ALL BELOW RETAIL PRICE

----- MAIL-ORDER CATALOG \$3.00 -----

For building, wiring, and detailing
requiring an extra steady hand

PLIERS, GRIPPING TOOLS

a complete selection
and consistent high quality



Write for our
new catalog
today!
Only \$1.00.



You can't do better than Mascot!

You'll really like the professional results these tools give. Look at the multi-purpose tweezers used for sorting, gripping, and assembling small pieces . . . or the fine pointed pliers like the long, needle nose type used for precise bending of hand rails and guard rails . . . or the versatile, but often hard-to-find hemostats which serve as pliers, tweezers, clamps, or heat sink as the situation demands. Not one of these tools is a toy. That's what makes Mascot special. Ask your model supplies retailer about these and other tools from the Mascot line.

SEND FOR OUR NEW 24-PAGE U84 CATALOG TODAY. PLEASE ENCLOSE \$1.00
TO COVER SHIPPING AND HANDLING. FEATURES OVER 160 ITEMS.

MASCOT™

P.O. BOX 243F • CARLSTADT, N.J. 07072

62b FineScale Modeler

CUSH

FACT, FICTION & FANTASY
MAIL ORDER — Our Specialty
MINIATURE FIGURES

— Connoisseur Castings —

New

IMRIE/RISLEY

54mm Scale

C-107 Confederate
Sgt. with Battle Flag
C-108 Confederate
Soldier Wearing
Blanket Roll

ALSO AVAILABLE

In "Jackson's Foot
Cavalry" Series:
C-106 2nd Lt. and
C-109 Barefoot
Soldier



C-107



C-108

\$6.25 Each + \$1.25 Postage per Order

Send \$4 For Illustrated Catalog
(\$5 Outside Continental U.S.)

Over 140 Pages Plus Periodic Updates

CUSH

(414) 258-6006

6525 W. Bluemound,
Milwaukee, WI 53213

BUILDING and IMPROVING VACUUM-FORMED MODEL AIRCRAFT

**This book takes
the mystery out of
vacuum-form
modeling!**

Now you can expand your modeling horizons and enjoy a variety of new modelbuilding projects—because now there's a book that takes the mystery out of vacuum-form modeling! **BUILDING AND IMPROVING VACUUM-FORMED MODEL AIRCRAFT**, by E. Richard Staszak, presents clear how-to-do-it information about basic, intermediate, and advanced assembly techniques you can use—for aircraft models of any size in any scale. In **BUILDING AND IMPROVING VACUUM-FORMED MODEL AIRCRAFT**'s 52 pages, you'll learn what tools and materials you'll need for vacuum-form modeling, you'll find assembly techniques explained, and you'll discover tips and techniques for detailing and finishing vacuum-formed models. You'll find valuable information on vacuum-formed kit problem solving, stretch-forming, and on casting parts. And **BUILDING AND IMPROVING VACUUM-FORMED MODEL AIRCRAFT** will show you, step-by-step, how to construct two vacuum-formed aircraft kits—the RAREplanes North American FJ-1 Fury, and the Sutcliffe Blackburn Beverley! Ask for **BUILDING AND IMPROVING VACUUM-FORMED MODEL AIRCRAFT**, \$6.95, at your favorite hobby shop, or use the handy coupon to order direct today!



DEPT. 5853

KALMBACH  BOOKS.

1027 N. Seventh St., Milwaukee, WI 53233

Enclosed is \$ _____ for _____ copies of **BUILDING AND IMPROVING VACUUM-FORMED MODEL AIRCRAFT** at \$6.95. Include for postage and handling: U. S. \$1; foreign \$1.50. Wisconsin residents add 5 per cent sales tax.

Name _____

Street _____

City, State, Zip _____

Charge to: ☐ MASTERCARD ☐ VISA Exp. Date _____

Card Number _____

Signature _____

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet. Price subject to change. © Kalmbach Publishing Co.



"That's a diorama of Sir Edmund Hillary's ascent of Mt. Everest that Harold started in the basement."



ramas (several of which were built by Shep Paine and Peter Twist, both FSM authors).

The catalog is \$5.92 including surface postage or \$9.52 for airmail.



General Motors: The First 75 Years of Transportation Products
Founded by William C. Durant in 1908,

VP CANADA 1/72 vacuforms BEST QUALITY

NEW - Aero A-300 late '30s Czech twin engine monoplane bomber \$ 8.95
Avro Canada Arrow 1958 Mach 2 delta wing (Price till Apr 30 \$11.95) 12.95
LaGG-3 WWII Russian fighter 5.95
Blohm & Voss BV-40 WWII glider fighter 3.95
Avia B-634 beautiful 1936 biplane fighter 5.95
Me163A rocket research fighter (NOT Komet) 5.95
Polish Injection Molded 1/72 scale
Mikro LWS Czapla reconnaissance monoplane 4.45
Mikro Yaki/IM WWII fighter 4.45
Jantor Standard Polish sailplane-decals, bagged 3.75

Send for full list. DEALER INQUIRIES INVITED.
Payment in US dollars. POSTFREE.
VICTORIA PRODUCTS, DEPT. S, 930 Foul Bay Road
Victoria, B.C., Canada, V8S 4H8

NEW FLEX-I-FILE™

for the precise model miniaturist

The Amazing "NEW" hobby tool for surface preparation of plastic, metal and wood models.

Easy to handle **FRAME** and tough abrasive **TAPES** let you reach into corners, smooth fillets and erase parting lines with complete control.

S-700 Starter Set \$3.98 includes:
(1) frame and (6) assorted "FLEX-I-FILE" tapes

Packages of (6) refill tapes:
fine, medium or coarse \$1.00 ea.

(actual size)

ANOTHER FROM
"Creations Unlimited"
OF GRAND RAPIDS, MICHIGAN

At your local hobby dealer
or order direct

Dealer inquiries welcome

2939 Montreat Dr. N.E., Grand Rapids, Michigan 49505 U.S.A.

arru-scale
DECALS: PLUS



ACCU-SCALE
3 Clayton Ave.
Bedford, Pa. 02155

DECALS

U.S. Letters and Numbers WWII
AD-1 2 Sheets 8 1/2 x 11 WHITE \$12.50
2 Sheets 8 1/2 x 11 BLACK
1 Sheet 5 x 7 YELLOW (Numbers only)
Suitable for 1:32 & 1:48

AD12 1234567890

AD-2 LUFTWAFFE Letters and Numbers \$17.50
6 Sheets 8 1/2 x 11, Yellow, Blue, Green, Red, Black, White.
1:32nd scale

44 JJ

AD-3 SAME AS ad-2 in 1:48th scale

KITS

VJ-1 Coming in January 1984; 1:32nd scale OHKA Model 11/Model 43 vacuform kit. \$10.00
VJ-2 OHKA Model 22; 1:32nd scale vacuform kit. \$7.50

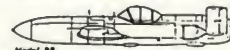


Model 11



Model 43 K-1 KA1

Please add 10% shipping and handling.
Mass residents add 5% sales tax



Model 22

by 1983 General Motors had produced 235 million automobiles and commercial vehicles, more than half of those ever built. This 224-page, 8 $\frac{3}{8}$ " x 10 $\frac{1}{4}$ ", hard-cover, horizontal-format book was commissioned by GM and produced by the editors of Automobile Quarterly Publications as part of GM's 75th anniversary celebration.

There are 385 photos (274 in color). A few photos show buses, trucks, and diesel locomotives, but most are of experimental, prototype, and production passenger cars made by General Motors' U. S., Australian, Canadian, English, and German branches from 1908 through 1983. These photos (each with a caption) are excellent.

The book is available from Automobile

Quarterly Publications, Box 348, Route 222 and Sharadin Road, Kutztown, PA 19530-0348; the price is \$24.95.

Small Arms of the World, 12th Edition

Originally prepared by W. H. B. Smith in 1943, this guide to military firearms through .50 caliber has most recently been revised by Edward C. Ezell. The hard-cover, 894-page, 8 $\frac{1}{2}$ " x 11" book contains descriptions of some 3,500 handguns, carbines and rifles, submachine guns, machine guns, and grenade launchers used by 42 countries from about 1900 to the present. There are several thousand photos and drawings.

One section discusses the development of small arms since 1945 — Ezell points out

ARTICLES OF WAR LTD.

Dealers in Domestic and Imported Books

Articles of War Ltd. has been dealing and supplying books to collectors, historians, and modelers for over 13 years. Our stock of over 4,000 books and periodicals provides an extensive selection of domestic and foreign language reference material.

Great reference material for:

**Aircraft
Naval Ships
Uniforms**

**Campaign Histories
Tanks—AFVs—Armoured
Vehicles**

Excellent for detailing and painting models etc.

- * Catalogs—lists published regularly
- * Quick efficient service (UPS delivery)
- * Master Card/Visa accepted
- * New and used or out of print titles.



Write for our FREE sample catalog or send us your want list.

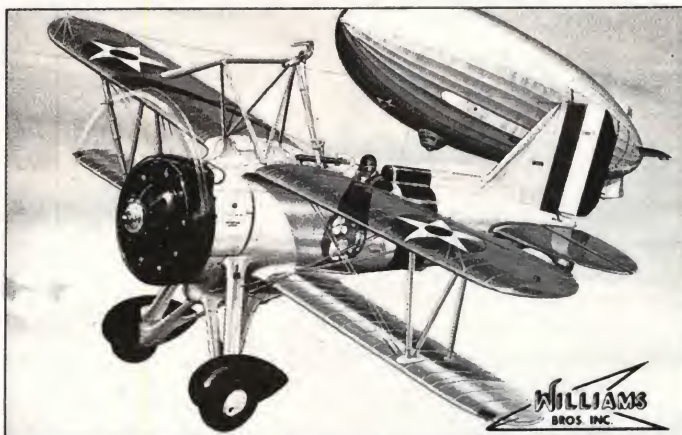


Articles of War Ltd.
7101 N. Ashland Ave.
Chicago, Ill. 60626

Curtiss

SPARROWHAWK

**1/32
SCALE
PLASTIC
MODEL
KIT**



The U.S. Navy Sparrowhawks operated from two dirigibles and an aircraft carrier during the 1930s, and were among the most colorful aircraft of aviation's Golden Age.

KIT FEATURES: ■ Decals to permit finishing model as any one of six different Sparrowhawks.

■ Two types of wheels (hard and flexible tires). ■ Monofilament rigging. ■ Detailed interior.

Send \$1 for complete catalog of kits and accessories: Dept. FSM

WILLIAMS BROTHERS INC., 181 PAWNEE ST., SAN MARCOS, CA 92069

THE INTERNATIONAL PLASTIC MODELERS SOCIETY

DO YOU WANT TO LEARN MORE ABOUT MODELING?

IPMS/USA OFFERS YOU...



Membership in a non-profit organization founded "BY MODELERS FOR MODELERS".

Membership includes 4 Quarterlies and 6 Updates per membership year. They contain articles on camouflage and marking, super-detailing, model conversions, scratch building, historical information, and much more.

Yes! Enroll me now in IPMS/USA.

I enclose \$ _____ for 1-year membership in IPMS/USA. I understand this membership includes subscription to four IPMS/USA Quarterlies and six Updates.

Name _____

Address _____

City _____ State _____ Zip _____

Country _____

Type of Membership:

☐ Adult \$18.00 ☐ Foreign \$21.00 ☐ Junior \$10.00 Birthdate _____

For Samples, send \$2.75.

Make check or money order payable to IPMS/USA

Please don't send cash!!

83044



Mail to:
IPMS/USA
New Membership
P. O. Box 480, FSM
Denver, Colorado
80201

BARBED WIRE

3/24 in. pcs. \$1.25 ea. + 50p.
THE ROCK QUARRY ★
3008 EMERALD-MESQUITE, TX. 75150

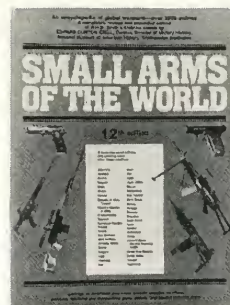
Needing Help Finding Kits?



send \$1.00
for sample
issue

• 3213 HARDY DR.
• EDMOND, OKLA. 73034

299 MODELS
P.O. BOX 55232
SEATTLE, WA. 98155
KIT 017-1
1-72nd
B-17H / SB-17
& PB-1W
Conversion Kit Designed for the
Hasegawa/Minicraft B-17G
\$7.00 POST PAID
Allow 6 Weeks for Delivery



that there has been a continuing trend to smaller caliber weapons with increased muzzle velocity and a greater rate of fire. Remaining chapters are arranged alphabetically by country and describe the weapons manufactured or used by each nation. There are special chapters on German and Japanese small arms of WWII.

The book is published by Stackpole Books, Cameron and Kelker Streets, Harrisburg, PA 17105; the price is \$49.95. **FSM**

AIRLINE HOBBY EXTRAVAGANZA!



Our Bahamasair 737 decal is available in both 1:144 and 1:200 scales. Check our catalog for more than 200 airline schemes from American through USAir plus many exotic and colorful international carriers.

Our kit selection runs from 1:200 through 1:72 scale and includes solid, vacuumformed and injection molded kits from our own molds as well as those of the major manufacturers around the world.

More than 200 color postcards are available from our kit and decal catalog listings.

KIT & DECAL CATALOG \$1.00

Our color slide catalog lists more than 10,000 35mm slides from the late 1930's through today which we duplicate using KODAK processing.

COLOR SLIDE CATALOG \$3.00

BOTH CATALOGS \$3.50, ADD \$1.00 OUTSIDE NORTH AMERICA

ATP INCORPORATED

PHONE 10:00AM-10:00PM



3014 ABELIA COURT
SAN JOSE, CA. 95121
(408) 629-2121

SCALE DOCUMENTATION
SCALE DRAWINGS MODEL PLANS
POST CARDS BOOKS
REPLA-TECH
INTERNATIONAL
1984 SHIP CATALOG \$3.25 48500 MC KENZIE HWY.
VIDA, OREGON 97488

1/72 SCALE ALBATROSS HU-16E
Injection Molded.
Send \$7.95 plus \$2.00 for postage & handling.
Texas Residents add 5% sales tax.
CACTUS AIRFORCE
P.O. Box 761, College Station, TX 77841

MODELER'S DISPLAY CASES

Protect your valuable models by placing them in an attractive, inexpensive **PLASTIC PLACE CASE**!



The **PLASTIC PLACE CASE** comes in 3 sizes that will accommodate any but the very largest models.

#1 is 10x12x5, which will take any 1/72 single engine and most twin engine planes **\$12.95**

#2 is 12x15x5, and will accept most 1/48 single engine planes from Skyraiders to Phantoms **\$15.95**

#3 is the "big one." It measures 22x22x6, and will accept anything with wingspans of VICTOR—VULCAN size in 1/72, or easily a 1/48 B-25 type plane **\$27.95**

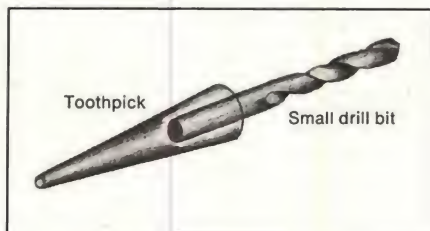
All cases are of 1/8" plexiglass, with beautifully polished edges. They come with a styrofoam base on which to mount your model.

AVAILABLE BY MAIL ORDER
For 56 page catalog send \$1.50 to:

THE PLASTIC PLACE
6321 S. Salina St. Nedrow, NY 13120
315/469-0450
VISA—MASTERCARD ACCEPTED
Please add \$2.00 SHIPPING per CASE

FSM TIPS AND TECHNIQUES

Would you like to share information on a useful tool or technique with other FSM readers? Send a brief description of the tool or technique and a black-and-white photo or a pencil sketch to FSM Tips, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233. Please enclose a stamped, self-addressed envelope for return of photos. Tips are paid for upon publication.



Small drill holders. Cut a round toothpick in half and carefully drill a hole into it with the size drill bit you wish to create a holder for. It's easiest to keep the drill bit stationary in a vise or locking pliers and turn the toothpick onto it. The bore should be about one-third the length of the drill bit. After the bore is made, place a tiny drop of super glue in the bore and insert the butt end of the drill. Colored toothpicks can be used to color-code different bits.

Gary Juran

Discount Hobby Center

Imported and domestic plastic models. Your mail order headquarters for: Hasegawa, Fujimi, Tamiya, ESCI, Monogram, Testor/Italeri, LS, Airfix, Nichimo, Matchbox, Otaki, MPC, Heller, KP, Revell, Takara, Tuskuda; books, magazines, and more. Send two 20¢ stamps for our latest catalog. Mastercard and VISA. See our other ad in classified section in this issue.

405 James St., Utica, NY 13501
315-733-3741

Lencraft

Our SPECIALTY is out of production & hard to find Aircraft-Ships-Armour-Decals

- | | | |
|-------------|----------|--------------|
| • ITALERI | • FROG | • AIRFIX |
| • MATCHBOX | • NOVO | • US AIRFIX |
| • HAWK | • ESCI | • MPC AIRFIX |
| • VACUFORMS | • REVELL | • VEB |
| • HASEGAWA | • KP | • HELLER |

Free search service for those wanted kits.
Monthly hot sheet mailing.
Send large SASE for list.
P.O. Box 8010, CALABASAS, CA 91302-8010

Heat source. A small, hand-held hair dryer provides a controllable, and above all, safe source of heat. I use it for working with plastic, but it can also be used to accelerate the setting of epoxies.

Dick Hirdes

Inexpensive magnifiers. Drugstore variety reading glasses (or dipters) can help when painting and detailing tiny objects. They allow your eyes to focus closer more comfortably and they are inexpensive.

Rick and Janine Bennett
FSM

WEAPONS AND WARFARE Publications

Over 300 original titles and facsimile reprint copies of hard-to-find booklets, publications and research aids are now available, only by direct mail order.

Send \$1.00 for large descriptive catalog, and you'll receive a FREE gift publication.

Weapons and Warfare Publications
218-FS5 Beech Street, Bennington VT 05201

Extensive coverage of
Aircraft — AFVs — Naval Vessels — Weapons
and More
for the scale modeler/historian!

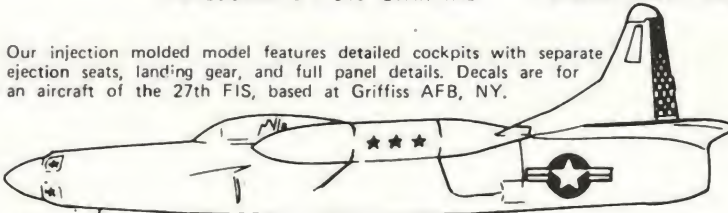
LIMITED EDITION LIMITED EDITION

THUNDERBIRD MODELS is pleased to announce our first 1/72 scale model:

The LOCKHEED F-94C 'STARFIRE'

available: JUNE 1984

Our injection molded model features detailed cockpits with separate ejection seats, landing gear, and full panel details. Decals are for an aircraft of the 27th FIS, based at Griffiss AFB, NY.



PRICE: \$6 plus postage (\$0.80 U.P.S. or \$2 Air Mail USA Only
\$2 surface or \$4 Air Mail overseas) DIRECT TO:



Route 13, Box 257B Fort Worth, Texas 76119 USA

Micro-Mark
Has it!

The New Robart

HOBBY PAINT SHAKER

NO MESS!
NO WASTED PAINT!
FULL COLOR MIX GUARANTEED!

FIRST TIME AVAILABLE—mixes paint better, faster, more thoroughly than you can with just a stick or hand-shaking. Holds 1/4 oz., 1/2 oz., 3/4 oz., 1 oz. and 1 oz. size bottles. Choose battery-powered (List \$19.95—Our Price Only \$12.95), or A/C plug-in unit (List \$29.95—Our Price Only \$19.95).
ORDER NOW—UNCONDITIONALLY GUARANTEED!

Use this coupon or send name, address and payment to:
Micro-Mark • Box 5112 KD • Clinton, NJ 08809

☐ YES! Send me BATTERY-POWERED PAINT SHAKER(S)
for only \$12.95 POSTPAID! (List Price \$19.95.)

☐ YES! Send me ELECTRIC-POWERED PAINT SHAKER(S)
for only \$19.95 POSTPAID! (List Price \$29.95.)

☐ Send me your FREE CATALOG of tools, accessories and
books for model builders.

☐ Check enclosed. (N.J. residents add 6% sales tax.) Sorry, no
☐ Visa ☐ MasterCard ☐ Amex CODs.


Acct. # _____ Exp. _____
24-HOUR CREDIT CARD PHONE: 800-225-1066

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

KX2000 introducing the ultimate in airbrushes



NOW ONLY
\$43.95
Full 1 Yr. Warranty

KIT INCLUDES:
KX2000 Airbrush & Angler
3-Bladed Air Hose
2 - 1 Oz. Jars
2 - 1/2 Oz. Jars
Instructions for
Care & Cleaning

As with an airbrush, the KX2000 is made of the finest materials. The KX2000 is a double action, internal mix airbrush. It features a polished nickel-plated brass head seal. Each has been individually tested to insure total satisfaction. We offer a complete service department with one day service on parts and repairs.

AMERICAN AIRBRUSH
800 Oak Spring Lane, Libertyville, IL 60048

Enclosed is \$_____ for _____
Name _____ State, Zip _____
Street _____
City _____
Charge to: ☐ MASTERCARD ☐ VISA
Card Number _____ Signature _____
Include \$3.50 for Shipping & Handling

BIG DISCOUNTS

AIRCRAFT. ARMOR. SHIPS. PAINTS. BOOKS

★ **BATTLE HOBBIES** ★
P.O. BOX 184
ST. PAUL PARK, MN 55071
CATALOG & UPDATES - \$1.00

All Regular Lines Plus:

- KOKU-FAN
- WAFFEN ARSENAL
- KOOKABURRA
- MARU MECHANIC
- SUPERMODEL
- NOVO & SMER
- OGONEK

VISA & MC ACCEPTED

Please mention FINE SCALE MODELER
when writing to advertisers

CLASSIFIED ADVERTISEMENTS

PLEASE FURNISH STREET ADDRESS FOR FSM'S PRIVATE RECORDS WHEN USING A P.O. BOX NUMBER IN YOUR AD

This section is open to anyone who wants to sell or buy scale modeling merchandise.

RATE: 20¢ per word. MINIMUM charge is \$2.40. Count ALL initials, single numbers, groups of numbers (i.e., AFV or B-24), name, address number, street number, city, state, phone numbers each as one word. Zip code is free. Payment should be made in advance.

CLOSING DATE: Jan/Feb issue closes October 15, Mar/Apr issue closes December 15, May/June issue closes February 15, Jul/Aug issue closes April 15, Sep/Oct issue closes

FOR SALE

Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92641 has military kits from around the world! Plastic armor, aircraft, warships, books, paints, tools. Mail orders sent anywhere. Catalog, \$2.50.

Scratchbuilders. Send today for our new 72-page catalog of scale building materials, tools, accessories, and books. Catalog \$3 applied to first order. Small Sales Co., Dept. FSM, P.O. Box 7803, Boise, ID 83707.

Recon Hobbies: Big discounts on armor, aircraft, ships, cars, games, hobby supplies, plus collectors' corner. Send \$1 for catalog to P.O. Box 123, Manhasset, NY 11030-0123.

Books, manuals for many military vehicles (AFV, trucks, Jeeps, etc.). Send two stamps for 16-page catalog. Portrayal Press, P.O. Box 1913F, Bloomfield, NJ 07003. (201) 743-1851 evenings.

Convert-A-Kits: Quality 1/76 scale resin armor conversion kits. Ideal for the modeler or wargamer. First releases: BT-5, BT-7, Stalin II, Sd. Kfz. 138, and more with new releases every month! Send SSAE for complete list and order form. Convert-A-Kits, P.O. Box 17733, Rochester, NY 14617.

We have the latest plastic, military, and automobile kit releases in stock. Mail order is a specialty with us. Also books, decals, paint, magazines, and more. Write or call. Ted's Engine House, 6307 Westfield, Pennsauken, NJ 08110. (609) 662-0222.

Kit Collectors International is the club for model kit collectors, with our bimonthly photo-illustrated journal "Vintage Plastic", featuring articles and news for kit collectors and loads of reader ads. Over 600 members worldwide. Many benefits for members. SSAE gets full information. \$1.75 for sample VPI issue. Membership \$12 per year U.S. and Canada; \$18 per year worldwide. Kit Collectors International, Box 38, Stanton, CA 90680.

Discover the exciting world of paper models. Featuring realistic, full-color scale replicas of aircraft, ships, cars, famous buildings, birds, and more. Easy to build. Get started today. Illustrated catalog, \$1. Starline, Box 322, Stanton, CA 90680. Over 300 items!

Japanese science fiction kits at low, affordable prices! Latest popular robot, monster, spaceship kits, all in our catalog. \$2 for latest issue, refunded with first order. Compare and save money at Starline, Box 322-SF, Stanton, CA 90680.

June 15, and Nov/Dec issue closes August 15. We do not furnish box numbers.

ALL COPY: is set in standard 6-point type. First several words only set in bold face. If possible ads should be sent typewritten to insure accuracy.

READERS' NOTE: When advertiser says SSAE or SASE he requires stamped, self-addressed envelope with your inquiry. LSSAE is large envelope.

Send your ads to FineScale Modeler, 1027 N. 7th St., Milwaukee, WI 53233.

Razor blades, single-edge carbon steel. Our industrial quality blades hold their fine edges long after ordinary blades dull. 100 for \$4.25; 200 for \$8; 300 for \$11.75; 500 for \$19.25; 1000 for \$37.50. Postpaid. Catalog, 50¢. Cobble's, P.O. Box 2, Deal, NJ 07223. (201) 922-9898.

Vietnam buffs. 20 mm ammo boxes cast in resin, for tracks or slicks, a set of two in 1/35, three in 1/48, four in 1/72, two 1/35 C-ration boxes, ten smoke grenade sets, two M-72 law sets, two Claymore pouch sets, four canteens without covers, three 2-quart bladder canteens, four M-151A1 tail lights, three bush hats, and one 1/72 vacuum form T-28 B-D canopy. Each item set \$1.50 plus 50¢ postage per order. Keith Pieper, 1467 W. 2nd St., Mesa, AZ 85201.

Master model maker. Military and fantasy models expertly built and professionally painted. Museum quality. Available for lecture-demonstration and catalog work. Alex Castro, 32-03 68th St., Woodside, NY 11377. Phone (212) 457-1479.

Lead soldier molds, scarce Civil War, WWI, WWII cannons, Napoleonic, fantasy. An easy and fun hobby. Illustrated brochure \$1 (refundable). Dunkin, Box 717FS, Calvert, TX 77837.

Discount book dealer: Big discounts on aviation and military subjects. Hard- and soft-cover titles from Germany, Italy, France, England, and the U.S. All current releases. 60¢ in stamps for 33-page list. Military Books "Germania," 4509 Xerxes Ave. S., Minneapolis, MN 55410.

"King of the Heavies" 380th bomb group 1942-1945. B-24 unit history just published. One of the most complete and accurate produced. Large format, hard-bound, 184 pages, 528 clear photos, all from private sources. 520 never published before. All 380th bomb group tail markings displayed in color. 30 pages of nose art photos grouped by Squadron. 5 pages in color. Plus much more. Privately published limited edition. \$35 includes postage. From Military Books "Germania," 4509 Xerxes Ave. S., Minneapolis, MN 55410.

Falklands Landrover: 1/76 injection-molded L. W. B. Landrover with canvas top, 30 pieces. The first of a new line of modern AFV kits. \$3 International Money Order, \$4 cash (includes airmail delivery). J. B. Models, 27 Hereward Way, Deeping St. James, Peterborough, England PE6 8QA.

Quitting hobby. Extensive AFV kit collection and library for sale. Send LSSAE for list. Prebeck, 244 Freedom Trail, East Peoria, IL

61611. (309) 698-3177.

Discount Hobby Center, 405 James St., Utica, NY 13501. Phone (315) 733-3741. Imported and domestic plastic models. Hasegawa 1/48 scale F-16A \$8.95, F-16 Thunderbird \$8.95, F-4J, F-4B/N, F-4C/D, F-4EJ Phantoms \$14.50 each. 1/48 scale weapon sets 1 and 2, \$8.95 each. 1/48 scale F-4E Phantom \$14.50 (hopefully in stock by the time you read this ad). Hasegawa 1/72 scale Hughes AH-64A Apache \$5.25, weapons loading set \$3.37, Mitsubishi T-2 CCV \$6.75. Fujimi 1/72 scale Ki-36 IJA Army \$2.98, Ki-55 IJA Type 99 trainer \$2.48, BAE Hawk Finnish \$2.98, BAE Hawk RAF \$2.98, AV-8A Harrier \$3.39, BAE Harrier GR.3 \$3.39, Sea Harrier \$3.75, Airfix 1/144 scale VC-10 tanker \$6.95, 1/48 scale Sea Harrier \$8.50, Airfix 1/72 scale U-2 (hopefully in stock by the time you read this ad, please call for price and availability). Heller 1/72 scale EC-121 \$9.97, Constellation L-749 \$9.97, Saab Lansen \$5.19, Mirage 2000 \$5.19, 1/48 scale F-84 Thunderbolt \$7.19, RF-84F Thunderflash \$7.19, Kopco K.P. 1/72 scale MIG-17U (2-seater) \$4.79, Dolphin L29 \$4.79, MIG 19 \$4.79, MIG 17 PF \$4.79, MIG 15 \$4.79, MPC 1/72 scale Douglas Skyraider \$2.49, F-5E Tiger II \$2.49, Kaman Sea Sprite \$2.49, Alpha Jet \$2.49, Saab Draken \$2.19, Rockwell B-1B bomber \$8.99, 1/24 scale AV-8A Harrier \$17.25, Revell 1/48 scale B-1B bomber \$22.50, F-16 Thunderbird, set of 4, \$17.98, F-15E Strike Eagle \$16.19, F-14A Tomcat \$16.19, 1/144 scale KC-135 Stratotanker \$3.75, KC-10 jet tanker with F-15 \$6.97, B-52H \$6.97, C-5A Galaxy \$13.50, Tamiya 1/48 scale A6M3 Zero (Hamp) \$7.50, A6M5C Zero type 52c \$7.50, Sea Harrier \$8.98, A-10 and F-15A \$15.75 each, Ki-84 Frank \$5.98, Zero type 21 \$5.98, J2N3 Rufe Jack \$5.98, Brewster Buffalo \$5.98, Raid (Zero/floats) \$6.75, 1/32 scale F-14A Tomcat \$52.50, Tamiya 1/35 scale armor M-1 Abrams \$10.50, Ford Mutt with tow \$5.98, M-151 A-2 Ford Jeep (Mutt) \$2.98, I.S. 60A1 \$10.50, Israel Merkava tank \$14.98, Testors/Italeri 1/72 scale F-4EJ Phantom \$4.50, F-5E and F-16 Thunderbird \$4.50 each. Testors/Italeri 1/35 scale armor Dodge "Beep" 3/4-ton truck \$6.75, Jeep ambulance \$4.89, radio operators \$2.79, Allied assault troops \$2.79, Medical Corp. \$2.79, frog seal team \$2.79, tool shop \$2.79, LS 1/144 scale P-3C Orion \$5.25, A-10 \$2.25. Weapons sets 1 and 2 \$1.49 each. F-16 Thunderbird set includes three planes and stand \$3.75, SR-71 \$3.75, F-14, F-15, F-16, F-18, MIG-25, Jaguar, F-4E, Tornado, Mitsubishi F-1, F-4EJ, F-15A, only 95¢ each. LS 1/72 scale Pitts S-2A Canadian Reds and Rothmans \$1.49 each. 1/72 scale BD-5 and BD-5J kit includes one each \$1.49. Monogram 1/72 scale B-1B bomber \$10.50, 1/48 scale B-24D \$10.50, F-106A, F-105F, A-18, F105G, F-14, F-15, F-4C, F-4J, and F-18 \$5.59 each, F-104C \$3.95, F-84 Thunderbolt \$3.95, 1/72 scale F-15E Strike Eagle \$3.95, Tekara 1/100 scale MIG-27, Yak-36, A-4M, F-5G (F-20), F-100, F-8, Ki-87, and Harrier (AV-8A/GR-3) \$3.75 each, F-14A, A-10 \$4.12 each. This is a small selection of some of the kits we have in stock. Please send two 20¢ stamps for our latest catalog. Ordering instructions: Orders under \$10 add \$1.50 shipping fee, over \$10 add \$2. MasterCard, Visa, and COD orders accepted. Phone orders also accepted. Phone (315) 733-3741. All New York State residents add 4% sales tax.

Military miniature bases, highest quality hardwood. Over 300 different combinations of wood, styles, and sizes available. Sampler package of six bases and listing, \$10 postpaid. The Base Camp, 33 Sheridan Ave., Metuchen, NJ 08840.

Glass domes, protect those special military miniatures. Mahogany base, ready for staining or varnishing, classic styling. Series 77 size (4" x 7") \$7 each, two for \$13, postpaid. \$11 size (3" x 4") \$6 each, two for \$11 postpaid. The Base Camp, 33 Sheridan Ave., Metuchen, NJ 08840.

Diorama cube. 4" x 4" plastic cube. An inexpensive way to protect miniature groupings. Ideal for 54 mm or 30 mm figures. Hardwood maple base included. Ready to stain or varnish \$6 each, two for \$11 postpaid. The Base Camp, 33 Sheridan Ave., Metuchen, NJ 08840.

The Base Camp, the place for high quality hardwood military miniature bases. Doing business for over 15 years. Thousands made. We serve the masters. Sample and listing \$2. Send to 33 Sheridan Ave., Metuchen, NJ 08840.

For all your hobby needs: Miniatures, plastic kits, games, supplies, etc. Mail order only. Catalog and updates \$3. Forest Hobbies, 514B Woodland Dr., Heath, OH 43056.

Scale metal naval warship miniatures. Catalog and sample, \$2. Task Force II, Box 1148-K, Orange, NJ 07050.

Plastic models, paints, accessories, all major brands, including imports. Specializing in armor, aircraft, and airliners. Catalog \$1, refundable. The Model Shoppe, 323 1/2 Richmond St., El Segundo, CA 90245.

Free catalog, monthly newsletter. Military miniatures, Minifigs, TMS, Ralpartha, Stone Mountain, Barton, 15 mm, 25 mm, 90 mm, and much more. Specializing in Napoleonic. The Model Shoppe, 323 1/2 Richmond St., El Segundo, CA 90245.

Pacific front is here. Membership contribution, \$16 U.S. Send \$1 for flyer to Japanese Information Clearinghouse, 108 S. Lee St., Irving, TX 75060.

"Tradition - Scandinavia & Willies" by Edward Suren of England. All 30 mm. Some of the finest figures in any scale. Perfect for diorama work. For the serious collector. Catalog \$1, refundable. The Model Shoppe, 323 1/2 Richmond St., El Segundo, CA 90245.

C-119 (1/48), B-25 (1/32), D-7 (1/18), and others. Armor ships for sale/swap for plastic automobiles. SSAE to John Heyer, 55 Prospect Ave., Staten Island, NY 10301.

Paper models, paper toys. Rare antique and modern models and toys of paper from around the world. Ships, planes, buildings, dolls, soldiers. Catalog \$2. The Paper Soldier, 8-C McIntosh Lane, Clifton Park, NY 12065.

For sale: Old and new kits. Send \$1 for latest list. Very good prices. APC Hobbies, Box 122, Earlsville, VA 22936.

APC Hobbies. Tamiya 1/35 Merkava \$15, Mutt with tow \$6, T34/76 1942 \$12, M42 \$13, Hasegawa 1/72 weapons loading set \$3.50, 1/48 F4EJ \$15.75, 1/48 F4E \$15.75, Pegasus 1/72 Spitfire \$9, Airfix 1/72 Vulcan \$15.50, OV10D \$4, Firefly V \$4, Aero Club 1/72 Aces II seats (F15, A-10) \$2.85, Ginter F6U Pirate book \$4.50, Red Star 1/72 (MIG 3, Lagg 3, Yak 3, Anatra DS-1) \$20.50, Battleline 1/35 Zippo for M113 \$5.50. Call (804) 973-2705. MasterCard and Visa accepted, or send direct to APC, Box 122, Earlsville, VA 22936. Postage \$1.50 per order.

Clear plastic for Mattel Vacuum, cut and punched to fit, ready to use. 20 sheets \$5, 50 sheets \$10. Add 50¢ postage per order. Free State Scale, Route 5, Box 118, Hagerstown, MD 21740.

Model Storehouse, 8580 Gaines Ave.,

Orangevale, CA 95662 has supplies for that special model. Let us be the place for all of your modeling needs. Send SS&E for list.

Over 600 back issues of Air Classics, Air Power, Wings, Air International, IPMS, Scale Modeler, Air and Armor Profiles, Air Trails Classic, Flying Models, the Squadron magazine, and Aeroplane Monthly. \$600 U.S. Also 97 1/4 scale WWII plastic models, \$600 U.S. Send SS&E for complete list to G. Wells, 1717 22nd Ave., N.W., Calgary, Alb., Canada T2M 1R6. Phone (403) 282-8385.

WANTED

Wanted to buy: Entire collections or single kits. No list too large or too small. Send me yours today. Paul W. Amody, 732 Inverness Ave., Louisville, KY 40214.

Wanted: Any kit for a 4-stack, flush-deck USN destroyer. Prefer U.S.S. J. D. Ford 228. Write Box 10-1862, Anchorage, AK 99510.

Wanted: Old, new, lost interest in kits, will buy one or one thousand kits. Send list or call Charlie Pace, Box 122, Earlysville, VA 22936.

(804) 973-2705.

Desperate for: Mattel Vacuform in good condition. Sutcliffe/Conrail PB2Y Coronado, Frog no. F247 Wessex. ITC: No. 3654 Grumman Goose, Sikorsky S.62 Civil Sea King (no. unknown), McDonnell XV-1 (no. unknown), Aurora: No. 393 C-119, Ryan X-13 Vertigo (no. unknown), CH-47 Chinook (1/48; no. unknown), Hiller XV-18 (no. unknown). Monogram: No. PA14 USN T-28B, no. PA163 or no. 6813 F7F-3 Tigercat, no. PA176 RB-66A, no. PA177 A5A Vigilante. Revell: No.

1822 CH-47 Chinook, no. H112 Douglas D-558-1. None needed, mint, just complete. Prices first letter or call. Need most for museum collection so please consider selling. Mike Floyd, 1426 S. Cedar, Ottawa, KS 66067 or between 7 and 11 p.m. CST. Call (913) 242-2774.

U.S.S. Oregon by I.T.C. P-26 and Cobra GT coupe by Aurora wanted. Have for sale "Aircraft in Profile" books, 14 bound volumes, excellent with dust jackets. \$200 UPS included. David Felstein, 4010 Hulman, Terre Haute, IN 47803. (812) 232-1982.

LOCAL HOBBY SHOP DIRECTORY

TELL YOUR HOBBY RETAILER YOU SAW HIS AD IN FSM

Local Hobby Shop Directory listings are available for the next twelve issues for \$110 (payable in advance) or for the next six issues for \$60 (payable in advance), or at \$10 per issue (billed to established accounts for a minimum of six insertions). Ads will be set in standard listing typography. All insertions must be consecutive and may be charged if you have credit established with us. No mention of mail order business or area code permitted.

CLOSING DATE: Jan/Feb issue closes October 15, Mar/Apr issue closes December 15, May/Jun issue closes February 15, Jul/Aug issue closes April 15, Sep/Oct issue closes June 15, and Nov/Dec issue closes August 15.

ARIZONA — Glendale

Specialized for the detail modeler.
Complete reference library.
Headquarters for ship models & parts.

VAL'S HOBBY HANGAR
5858 W. Camelback Rd. 934-6174

CALIFORNIA — Anaheim

Everything for the model ship builder;
RC boats, cars, planes, military, science,
tools, books & rocketry. AT HOBBY CITY.
Open Mon-Fri 10-8. Sat & Sun 10-6.

CENTURY MODELS
1238 Beach Blvd. 821-8320

CALIFORNIA — El Cajon

Plastic aircraft, armor, and science fiction
kits, wargames, wargame figures, and books.
Open Mon-Fri 11-6. Sat 10:30-5. Sun 12-4.

MILITARY EMPORIUM
700 N. Johnson #N 447-6662

CALIFORNIA — Garden Grove

Military kits, aircraft from around the world.
Plastic armor, aircraft, wargames, books,
paints, tools. Open Mon-Thur 12-8 p.m.
Fri 12-8:30. Sat 10:30-7. Sun 12-5.

BROOKHURST HOBBIES
12741 Brookhurst Way 636-3580

CALIFORNIA — Lakewood

Importers of scale models, accessories,
supplies, books & magazines from around
the world plus all domestic lines.

THE MILITARY SHOP
Lakewood Center Mall No. 128 630-5556

CALIFORNIA — Los Angeles

We stock Revell, Monogram, AMT, Tamiya,
Testor, Hasegawa & more. Tools & supplies.
Also RC planes, cars, boats, HO & N trains
Open Monday-Saturday 10:15-6 p.m.

NATICK STORE
209 W. 4th St. (Downtown) 626-3339

CALIFORNIA — Los Angeles

Plastic kits, military & fantasy miniatures.
Plus paints, tools and accessories.
Open Mon-Thur 9-5. Fri & Sat 9-7. Sun 11-5.

OUR STORE
5011 York Blvd. 256-3577

CALIFORNIA — Orange

Complete stock of styrene, paints, supplies &
kits for modelers. One of Southern California's
most complete stocks of model railroad
supplies from #1 ga. to Z ga. Open 7 days.

FRANK'S HOBBY SHOP
6667-668 N. Tustin Ave. 639-9901

CALIFORNIA — Ontario

We carry the tools, wood, plastic, and kits
to complement any hobby field.
Mon-Fri 10 a.m.-7 p.m., Sat 10 a.m.-6 p.m.

JACK'S HOBBYCRAFTS
2509 So. Euclid 984-8700

CALIFORNIA — Pasadena

Wide selection of models featuring;
aircraft, cars, ships, and military models.
Also building supplies, books, paints,
decals, parts, and tools.

THE MODEL WORKS
1655 E. Colorado Blvd. 793-6061

CALIFORNIA — Sacramento

Huge selection of foreign and domestic
plastic kits. Books, games, figures,
rockets, trains, paints and supplies.
We special order.

RIVERSIDE HOBBIES
6407 Riverside Blvd. 392-9739

CALIFORNIA — Upland

One of the largest selections of kits, reference
material, and accessories in the southwest.

J&M HOBBIES
1655 N. Mountain 985-9212

CALIFORNIA — Walnut Creek

Military kits, books, games, and figures.
Open 11 a.m. to 5:30 p.m. daily.

CENTURION MILITARY HOBBIES
3087 N. Main St. 937-2623

COLORADO — Grand Junction

Western Colorado's complete hobby center.
Mon-Fri 10 a.m.-6 p.m., Sat 9:30-5:30.

The HOBBY HUT
1125-27 North Ave. 242-8761

COLORADO — Loveland

HO & N gauge trains, Märklin, plastic models.
Wooden ships, wood supplies, paint supplies.
X-acto and Dremel tools, model rockets.
Open Mon-Fri 10-5:30. Sat 10-5. Sun 12-5.

THOMPSON'S HOBBIES
1730 W. Eisenhower Blvd. 669-2326

CONNECTICUT — Cos Cob

Trains, planes, armor, doll houses and
miniatures. All hobby accessories.

HOBBY HOUSE
405 E. Putnam Ave. 869-0969

CONNECTICUT — Manchester

Complete plastics, cars, planes, trucks, ships.
Military, diorama supplies, decals.

The TRAIN EXCHANGE
71 Hilliard St. 646-0610

CONNECTICUT — Milford

#1 in specializing in
hard-to-find models,
domestic and foreign.

HOBBY HAVEN
395 Boston Post Rd. 874-4434

CONNECTICUT — Stamford

Complete line of plastic kits,
aircraft, ships, military models,
all paints and supplies.
Friendly service. Open daily 10-5:30.

HOBBYCRAFTS, INC.
40 Long Ridge Rd. 323-1736

FLORIDA — West Palm Beach

Fine tools. Supplies. Special orders.
Mon-Fri 9:30-6. Sat 9:30-3. Closed Sunday.

CRAFT HOUSE HOBBY SHOP
1079 N. Military Trail 683-0764

GEORGIA — Smyrna

HO & N scale for your railroading enjoyment.
Complete line of plastic models and paints.
Open daily 10-7. Sat. to 5. Closed Sunday.

HOBBY JUNCTION
3260 S. Cobb Drive 432-2538

GEORGIA — Warner Robins

Military models, books, plastic models, and
paints. Also a complete line of HO and N gauge
trains, RC planes, and rockets.

PARKERSON'S HOBBY SHOP
1727 Watson Blvd. 922-7944

ILLINOIS — Chicago

Complete stock domestic/imported N, HO, O
kits and ready-to-run trains and supplies.
Lionel, LGB, Unimat; crafts, boats, airplanes,
live steam, collector's items.

TROST HOBBY SHOP
3111 W. 63rd St. 927-1400

ILLINOIS — South Holland

One of Chicago area's largest selections of
plastic kits. 200 military, 500 cars,
400 planes, 100 ships, 50 trucks.

SCALE MODELS
1048 E. 162nd 339-3922

IOWA — Des Moines

One of the Midwest's best selections of
plastic models (injected & vacuformed),
paints, decals, books, tools & supplies.

IOWA SERVICE HOBBY
2706 Beaver Ave. 279-1173

KANSAS — Overland Park

One of the Midwest's finest selections
military models, miniatures, books,
modeling supplies, war and fantasy games.

THE KING'S CROWN
6860 W. 105th St. 341-6619

KENTUCKY — Hopkinsville

A full line model shop with an extensive
selection of plastic kits & diorama,
miniature, and gaming supplies.
We cater to the serious hobbyist.

THE HOBBY SHOP
Pennyrile Mall 886-5749

MASSACHUSETTS — Worcester

"The Home of Hobbies since 1946."
Plastic airplanes, ships, autos, paints, tools, &
supplies. Complete line armor, MC & VISA.
Daily 9:30-5:30. Wed 'til 8 p.m.

HENRY'S HOBBY HOUSE, Inc.
34 Franklin St. 754-5604

MICHIGAN — Ann Arbor

Kits Galore-Airbrushes & Accessories.
Special orders for those hard-to-find items.
Mon-Fri 11 to 9, Sat 9:30 to 5:30.

RIDER'S HOBBY
115 W. Liberty St. 668-8950

MICHIGAN — Marquette

Plastic and wood models.
Planes-cars-trucks-ships
decals-glues-paints-tools.

HOBBY WORLD
124 S. Front St. 228-4098

MICHIGAN — Westland

Scale model trains, cars, planes, ships, armor
and accessories. Scratch builders supplies,
paints, airbrushes & brushes, books, games &
magazines. Mon-Fri 10-6. Fri til 7. Sat 10-5.

DAVE'S HOBBY & TV
29026 Warren Road 422-4464

MISSOURI — Kansas City

1000's of military & fantasy miniatures.
100's of fantasy & military games.
Models, MicroScale, books, accessories.

YANKEE DOODLE GAME & HOBBY
6831 Longview Rd. 761-1113

MISSOURI — St. Louis

Everything in hobbies.
MasterCard, Visa, and checks welcome.
Two convenient locations.

ASTRO HOBBY HOUSE COMPANY
1245 S. Laclede Station Rd. 961-7093

NEVADA — Reno

Planes, trains, boats, cars, crafts,
games, books, tools, and supplies.
Open daily 10-6. Fri 10-9. Closed Sunday.

HIGH SIERRA MODELS
953 W. Moana Lane 825-9098

NEBRASKA — Bellevue

Just outside the Strategic Air Command
Museum means plastic models are our
specialty. Worth a visit.

AIR-CRAFT HOBBIES
706 W. Mission 291-6630

NEW JERSEY — Cranford

One of the best little hobby shops in Jersey.
Plastic kits, wooden ships, HO & N trains.
Paints, books, fabulous displays.

DICK'S HOBBYLAND
16 North Union Ave. 272-7660

NEW JERSEY — Old Bridge

Role playing games, books, magazines,
hobby kits from around the world.
Military and fantasy miniatures.
HO trains and paints.

ADVENTURE HOBBIES
596 Englishtown Rd., near Rt 18 251-2030

NEW JERSEY — Pennsauken

The latest in plastic military kits, books,
magazines, paints and decals. We have
automobile and ship kits.

TED'S ENGINE HOUSE
6307 Westfield 662-0222

NEW JERSEY — Red Bank

One of New Jersey's most complete hobby
centers. Open Mon-Wed 10-6. Thur & Fri 10-8.
Sat 10-5. Sun 12-4.

HOBBYMASTERS
62 White Street 842-6020

NEW YORK — Bay Shore

Complete selection of models;
military, airplanes, cars.
Building supplies, paints, and tools.

SOUTH SHORE HOBBIES
577 E. Main St. 665-7707

NEW YORK — Brooklyn

Complete line of military kits, both domestic
and imported. Paint and accessories.
Mon, Thur, Fri 10:30 a.m.-8:00 p.m.
Tue, Wed, Sat 10:30 a.m.-6:00 p.m.

WALT'S HOBBY SHOP, Inc.
7909 5th Ave. 745-4991

NEW YORK — Hicksville

One of Long Island's fastest growing model
shops. Military airplanes, cars, RR building
supplies, paints, decals and tools. Open 7 days.
Mon-Fri 10-9. Sat 10-6. Sun 10-4.

RIGHT TRACK HOBBIES
113 Broadway 433-0123

NEW YORK — Lindenhurst

Plastic model kits, books, paints, supplies
and tools all at substantial discounts.
Tamiya, Minicraft, Heller, Testors,
Revell, etc.

R. M. GROENE & CO.
867 Atlantic St. 957-5923

NEW YORK — Middletown

One of the oldest & most complete railroad
shops in area. We stock HO, N, O, S, Z, HOn3 &
On3. Try us for your hard-to-find items.
Open Mon-Sat 10-5. Thur & Fri to 7pm.

AREA MODEL TRAINS, INC.
15 West Main St. 343-7141

NEW YORK — New York

Plastic and wooden kits, rockets. We specialize
in static and remote control ship models.
Open Mon-Sat 9-7. Sun 11-5.
Closed Sundays June, July & August.

JAN'S HOBBY SHOP
1431A York Ave. 861-5075

NEW YORK — Utica

Imported & domestic plastic models.
HO & N scale trains. Rockets, air brushes,
books, scratchbuilding supplies.

DISCOUNT HOBBY CENTER
405 James St. 733-3741

NEW YORK — Yonkers

Plastic military model kits, scratchbuilding
& diorama supplies, metal figures, airbrushes,
decals, how-to books, HO trains. D&D figures.
Mon. 3-8, Tues.-Fri. 10-8, Sat. 10-6, Sun. 1-5.

ED'S HOBBY SHOP
847 McLean Ave. 237-1649

OHIO — Cleveland

Airplanes, boats, RC, rockets, plastic kits,
trains, books, tools, wargames.
Mon-Fri 10-8:30. Tue-Wed-Thur-Sat 10-5.

NATIONAL HOBBY, INC.
5238 Ridge Road 749-2450

OHIO — Cleveland (Lakewood)

Large selection of aviation and military books and magazines, general hobbies. Open 7 days.

WINGS HOBBY SHOP

17112 Detroit Ave. 221-5383

OHIO — Columbus

All scales of imported and domestic aircraft, armor and miniatures. Decals, books, paints. 12-9 daily, 12-5 Sunday

STRETE HOBBIES

3655 Sullivant Ave. 279-6959

OHIO — Mansfield

Plastic military model kits, military medals, books, coins, military miniatures, D & D, wargames and hobby supplies. Mon-Fri 11 a.m.-6 p.m. Sat 12-6 p.m.

THE PANZER HUT

1345 Park Ave., W. 529-4339

OHIO — North Canton

Great selection of domestic & imported kits, how-to books, airbrushes, tools, paint, wood & glue. HO & N trains, rockets, games, R/C specialists. Hobby consultants. Special orders.

MODELER'S HAVEN

4255 Portage N.W. 499-6000

OHIO — Oak Harbor

Plastic & wood kits, scratchbuilding and diorama supplies. Tools and accessories. Personalized and friendly service.

OAK HARBOR HOBBIES

136 W. Water St. 898-1300

PENNSYLVANIA — Allentown

Collector's corner; military figures, the latest in armor & aircraft kits. War gaming, fantasies. Complete line of paints.

ROSEMONT HOBBY SHOP

Trexler Mall 398-0210

PENNSYLVANIA — Erie

Plastic kits, books, games, railroads. Metal figures, military & fantasy. Cockpit details, scratchbuilding & diorama materials & details. Open Mon-Fri 11-8, Sat 9-5.

PENN STATION MODEL SHOP

3435 West Lake Rd. 833-5423

PENNSYLVANIA — Philadelphia

Plastic & balsa kits, cars, planes, ships, military modeling supplies, tools, paints. Badger, Paasche, BlueJacket ship fittings, trains, and miniatures.

MANAYUNK HOBBIES & CRAFTS

4303 Main St. 482-1691

RHODE ISLAND — Pawtucket

All types of model kits, domestic & imported, old & new, for all interests; plus books, paints, magazines, tools and supplies. Open Mon-Fri 4 p.m.-8 p.m. Sat 10 a.m.-6 p.m.

PARENT HOBBIES

270 West Ave. 722-2398

FILL ALL YOUR NEEDS**ALL THE TIME****AT YOUR HOBBY DEALER****TENNESSEE — Chattanooga**

Hobby supplies for the craftsman in modeling autos, trucks, planes, armor, figures. Come see our customers' award winning displays. Open Mon.-Sat. 10 a.m.-9 p.m., Sun. 1-5 p.m.

CHATTANOOGA HOBBY CENTER

5425 Highway 153 North 875-8231

TEXAS — Abilene

For just about the best scale modeling and models. Monthly meetings. Open 9-5:30 Monday through Saturday.

MAKER'S HOBBIES

715 Grape Street 673-3291

TEXAS — Arlington-D/FW Metroplex

Kits-tools-details-wood-plastic Books-scenics-paints-R/C-D/D HO, N railroad layouts Mon-Fri 10-8, Sat 10-6. We are modelers.

THE HOBBY HUB

903A Pioneer Pkwy W. 265-8101

TEXAS — Austin

Our specialty is scale modeling. Wide selection of domestic and foreign kits, paints, tools, books and supplies.

KING'S HOBBY SHOP

8810 Lamar 836-7388

TEXAS — Denton

Large selection of airliner kits & decals. Vacuumform and plastic models. Scale R/C kits and supplies. Monthly specials.

AIRPLANES, ETC.

718D Hercules 382-0950

TEXAS — El Paso

Largest selection of aircraft and military models in west Texas. Also: Paints, books, Microscale decals and finishing products for modeling. Expert advice. 10 to 6:30 Mon.-Sat.

HAL'S HOBBY SHOP, INC.

No. 57 Sunrise Ctr. 755-1914

TEXAS — Irving (Dallas Area)

Aviation books, profiles, magazines, imported plastic kits. HO, N scale trains, FAOW, R/C, U/C planes and cars. Mon 1-7, Tue-Sat 9:30-7.

M-A-L HOBBY SHOP

108 S. Lee St. 438-9233

UTAH — Roy

Complete lines of plastics, books, wargames and figures, accessories and paints with expert advice to aid you. Special ordering is our business.

MATT'S MODELS

5649 S. 1900 W. 825-1400

VIRGINIA — Virginia Beach

Specializing in Lionel, HO, N trains and accessories. Repair service available. Complete hobby & craft store. Daily 10-8.

PEMBROKE STATION

4576-8 Pembroke Mall 490-2912

WASHINGTON — Bellevue

One of Seattle's finest shops for the fine scale modeler. Open Mon-Tue 10-8. Fri & Sat 10-midnight. Sun noon-5.

THE TRIPLE ALLIANCE

10328 Main Street 453-8939

WASHINGTON — Bremerton

Old kit corner; dioramas specialist. Armor, aircraft, ships, figures and modeling supplies.

THE EAGLE SHOP

107 Washington Ave. 479-4113

WASHINGTON — Seattle

Scale model ships, trains, planes, tanks, military & wargaming miniatures, books, tools, decals, etc. Mon, Wed, Fri 12:30-6:00; Tue, Thur 12:30-8:00; Sat 10:00-6:00.

American Eagles Inc. Military Hobbies

8556-58 Greenwood N. 782-8448

WEST VIRGINIA — Nitro

The special shop for special people. All brands of plastic kits, all scales. A full line of parts for the perfectionist. Complete hobby & craft center. Open Mon-Fri 10-5:30, Sat 10-5.

NITRO HOBBY & CRAFT CENTER

21st Street 755-4304

WISCONSIN — Madison

One of the Midwest's most complete hobby shops. Tools, plastic kits, wargames, model railroad, miniatures. Hours: 9-9 Mon & Fri, 9-6 Tue, Wed, Thur, 9-5:30 Sat, 12-5 Sun.

MIDVALE HOBBY SHOP

505 S. Midvale Blvd. 238-2233

AUSTRALIA — North Territory, Darwin

Large range of plastic model kits. R/C aircraft, boats & cars. Model railroad supplies, games.

Darwin Hobby Shop Centre, Pty., Ltd.

Shop 9, Winnelle Shop. Center 818404

CANADA — Fredericton, N. B.

The modelers store. Specializing in trains, armor, planes, war & fantasy games. Only quality lines stocked. Open Tue-Wed 9-5, Thur-Fri 9-9, Sat 9-5.

THE RAILHEAD

384 Queen Street 454-1909

CANADA — Ottawa, Ontario

One of Canada's leading model shops. Complete line of military & aircraft kits, decals, paints and accessories.

HOBBY HOUSE, LTD.

478 Rideau St. 232-2778

CANADA — Kingston, Ontario

Serving the model builder since 1951. Always an outstanding variety of plastic kits R/C, railroad, figures, games, tools and books. Daily 9-5:30, Fri 9-9. Closed Monday

LLOYD SHALES HOBBY SUPPLIES

208 Division St. 548-8427

INDEX TO ADVERTISERS

WE BELIEVE that our readers are as important as our advertisers: therefore, we try to handle all readers' complaints promptly and carefully. If, within a reasonable length of time, you do not receive your merchandise or a satisfactory reply from an advertiser, please write to us. In your letter please detail exactly what you ordered and the amount of money you sent. We will then forward your complaint to the advertiser for action. If no action is ultimately obtained, we will refuse to accept further advertising from him. Address complaints to: FineScale Modeler, 1027 N. Seventh St., Milwaukee, WI 53233.

A

A P C Hobbies 60
A T P, Inc. 66
Accu-Scale 64
American Airbrush 68
Articles of War Ltd. 65
Aztex Corporation 10b

B

Badger Air Brush 16
Bare Metal Foil Co. 60
Bargains Galore 62b
Battle Hobbies 68
Binks Manufacturing Company 13
John W. Burns 66

C

Cactus Air Force 66
Cal-Scale 62a
Castolite 40
Clover House 62a
Combat Models 27
Combat Series 62a
Conway Maritime Press 16
Creations Unlimited 64
Cush 62b

D

D & J Hobby & Craft 61
Discount Hobby Center 67

E

Empire-Pacific Ltd. 2
Evergreen Scale Models 60

F

1st Armored Model Supply Company 10a
FineScale Modeler 11, 17, 62
Floquil-Polly S Corp. 13
Paul Freiler's Historical Models 40

G

Gateway Hobbies 59
Grandt Line Products 62

H

Harold's Place 10b
Heritage Ship Builders 62a
Hobbyland 62
Hobby Helpers 10a
Horizon 13

I

IPMS/USA 65
I/R Miniatures 41
Icarus Models 62a
Imported Specialties 58
International Historic Films 62b
Island Model Craft Supply 2

K

Kalmbach - Books 63, 71
Kalmbach - FineScale Modeler 11, 17, 62
A. Kempees 27
Kit Collectors Clearing House 66

L

Lencraft 67
Little Generals 40

M

Mascot 62b
Meta Models 62
Metalizer Products 27
Metropolitan Model Supply 61
Micro Mark 67
Model Expo 4
Model Expo Publications 59
Model Rectifier Corp. 72
The Model Works 58
Murphy's Rules 8

N

Naval Institute Press 42
Northeastern Scale Models 58
NorthWest Short Line 10a

P

Pacer Technology and Resources, Inc. 35
Plastic Military Models 62
The Plastic Place 66

Q

The Quartermaster 62b

R

Repla-Tech International 66
Riverside Hobbies 10b
Robart 61
Rock Quarry 66

S

Scale Aircraft Modelling 14
Scale Models 58
Series 77 Miniatures 14
Squadron Signal Publications, Inc. 9
Stevens International 8
Strete Hobbies 58

T

Taubman Plan Service 41
Thunderbird Models 67
Tools For Hobbies 8
299 Models 66

V

Victoria Products 64
Vintage Castings 62a

W

W.R.W. Imports 5
Waldron Model Products 10a
War Eagle 60
White Eagle 59
Weapons & Warfare Publications 67
Williams Brothers 65

X

X-Acto 5

HOW TO BUILD PLASTIC SHIP MODELS

In this book you'll discover how to build historically accurate ship models from plastic kits. Author Les Wilkins provides 64 pages that will guide you as you model sailing and steel ships. Step-by-step instructions for building the U. S. S. *President* are also included. With this book, beginners will achieve good results from the start and veteran modelbuilders will learn new modeling techniques! \$6²⁵



FAMOUS SPACESHIPS OF FACT AND FANTASY

Here's a source of data about the famous spacecraft of history and lore! In 88 pages, you'll find drawings and photos (many in color) of spacecraft such as the Saturn V moon rocket, Apollo Command and Service modules, Lunar Module, Space Shuttle Orbiter, Orion III, Star Trek's U. S. S. *Enterprise*, and Star Wars' X-wing fighter. And you'll discover step-by-step instructions on how to model each spacecraft! \$8⁵⁰



MODELING TANKS AND MILITARY VEHICLES

In 76 pages, Sheperd Paine shows you how to build accurate, realistic armor models that you'll be proud of. Paine covers basic modeling techniques such as kit assembly and painting, then progresses to kit conversions, weathering, detailing, and even scratchbuilding. Step-by-step instructions for constructing an Opel Maultier, Horch 4 x 4, Super Sherman, and M25 tank transporter are included! \$8⁹⁵



**DEPT. 5854
KALMBACH BOOKS**
1027 N. SEVENTH ST.
MILWAUKEE, WI 53233

Please send me the books I've marked.

- ☐ My check is enclosed
☐ This is a credit card purchase

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet. Prices subject to change. © KALMBACH PUBLISHING CO.

NAME _____

STREET _____

CITY _____

STATE, ZIP _____

CHARGE TO: ☐ MASTERCARD ☐ VISA EXP. DATE _____

CARD NUMBER _____

SIGNATURE _____

QUANTITY	TITLE	PRICE
_____	BUILDING PLASTIC MODELS	\$4.75
_____	FAMOUS SPACESHIPS OF FACT AND FANTASY	\$8.50
_____	HINTS AND TIPS FOR PLASTIC MODELING	\$3.95
_____	HOW TO BUILD DIORAMAS	\$8.95
_____	HOW TO BUILD PLASTIC SHIP MODELS	\$6.25
_____	MODELING TANKS AND MILITARY VEHICLES	\$8.95
_____	WORLD WAR TWO JET FIGHTERS	\$8.50
SUBTOTAL		_____
Postage and handling: U. S., \$.75; foreign \$1.25 (per order); Wisconsin residents add 5 per cent sales tax		_____
TOTAL		_____

MRC-Tamiya's 1/12 scale motorcycle series... striking realism at a surprising price.

IF YAMAHA, SUZUKI AND HONDA MADE MODELS,
THEY'D LOOK LIKE THESE.

Because MRC-Tamiya makes precise models that are really big on detail, they're perfect for your shelf top display case or racing diorama. Whether you choose our Honda CB750F or the Yamaha YZR500 Grand Prix Racer, or any of the others in this new super series, you'll get a kit that looks and "acts" like the real thing.

DOWN TO THE LAST HEAD BOLT

Take our Suzuki RGB500 for example. Just like its full scale prototype, it has a superbly detailed, square, 4-cylinder, watercooled engine that's accurately reproduced down to the last head bolt. It even has plastic plug wires and water hoses . . . to give you a scaled down powerplant that looks so real you can almost hear it screamin'.

But there's more. Operational steering plus a full-floating rear suspension that swings, dampened by a real metal spring. It looks every bit as real as the one that earned Suzuki the 1980 World Manufacturers Trophy. So collect just one, or collect them all, you'll have a series that's a challenge to build, and a pleasure to show.

MRC-TAMIYA . . . we add realism to everything we make.



Model Rectifier Corporation / P.O. Box 710
2500 Woodbridge Ave., Edison, N.J. 08818



1401 Yamaha YZR500



1402 Yamaha RZ250



1404 Yamaha RZ350



1405 Yamaha Beluga 80



1406 Honda CB750F



1407 Honda CB900F2



The Suzuki RGB500 G.P. Racer (1403) is shown here with and without cowlings. The cowlings has been removed for a better photographic look at the precision detailing.